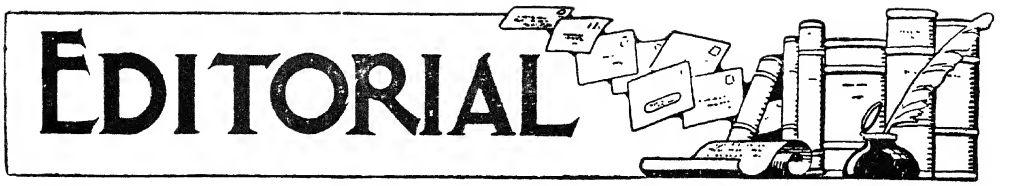
The Oriental Watchman and Herald of

HEALTH

HEALTH AND HAPPINESS

Year of Publication

April, 1949



THE UNITED NATIONS

IN SPITE of all that has been said and written about the United Nations Organization, about its dismal failures and disappointing conduct, it must be conceded that some of the problems with which it has attempted to deal are beyond human control. The overt acts that fill the earth with distress and confusion can in some instances be controlled by politics and force under the direction of men, but the spirit that is in the heart of man and which is responsible for that which is overt, and is seen and known, cannot be so controlled. Therefore, if the United Nations appear to have failed in Berlin, in Palestine, and elsewhere, the disappointment will be less pungent by keeping this thought in mind.

Overt acts of violence and infringement of law, may sometimes be suppressed by physical force, civil or military, but the United Nations Organization was created to deal with aggressive and obstreperous nations who are inclined to disregard the rights and welfare of other nations without recourse to physical force and violence. International differences, hitherto usually settled by war and other forms of terrible and destructive violence, are by the organization to be dissolved by force of the intellect. Discussion is to take the place of cannon, and argument and logic the place of bombs and shells.

But we may argue that since its inception the UNO has talked and talked and discussed and discussed without yet achieving anything noteworthy or guaranteeing that there shall be no more war, therefore, it is now time to conclude that it is useless and can serve no good purpose! Wars go on as hitherto, more wars are brewing, and events preparing the stage for another world war are similar to those that preceded other world wars. So, what's the use? Well, suppose for a moment that during these past three or four years there had been no United Nations Organization. What might have happened? The nations are angry and suspicious. They fear one another. They are snarling and snapping and showing their teeth like bull dogs ready for fight and ready to begin at any time. But because of the restraints exercised by the ridiculed UNO, the great powers that might complete the devastation of the world begun by the last war, are held in check, giving us all a little more time to work out our destinies whatever they may be. And this restraint is exercised not by armies and international police forces, but by the force of discussion. But for this restraint the world might well be in the throes of another world war at this very minute, with all its enhanced horrors. And so before we condemn the UNO too severely we might well suspend judgment until we also have discussed differences.

There was a time when nations were ruled by autocratic rulers who held their power by a theory known as the "Divine Right of Kings." Their word was irrevocable law, and there was then no need nor room for discussion. But as human intelligence developed, men began to discuss the "Divine Right," and with the discussions, light was shed on the subject until it was seen that there is no such "right." In those days before means of travel and communication had been developed, people lived and died within a comparatively short radius of where they were born. They were governed by provincialism and custom to such a degree that anything that violated custom was considered well-nigh sacrilege. But increased mobility in the later world and especially in the modern world has increased the tendency to discuss differences and to suspend judgment until opinions have been heard.

The UNO is endeavouring to settle differences by discussion. But they meet many apparently insurmountable obstacles, one of which is the deep-seated aversion in representatives of nations to introduce for discussion subjects that touch their customs or culture traits. The spirit of the "Divine Right of Kings" is not dead in certain lands where it has become the custom to ascribe nearly all rights to the rulers and almost none to the ruled. The representatives of such lands cannot readily co-operate with those from democratic governments, because the yoke of custom has to break down in government by discussion.

When subjects are put up for discussion it is thereby tacitly admitted that the matters are not settled by any fixed rule, and that there is no divine law about it that must not be questioned. Further it is admitted that there is no sacred authority, no transcendent and divinely appointed man whom everybody has to obey in those matters. This naturally is not pleasing to those dictators and totalitarians whose greed and rapacity extends to the uttermost bounds of the earth.

Once a subject has been admitted for discussion it cannot very well be withdrawn, for its girth of mystery has been removed and it is forever after open for discussion except as some brute force is able by violence to suppress it. But as far as the human mind is concerned it is a subject fit for open discussion and not the monopoly of any sacred being.

The questions discussed at the UNO are of pressing interest to the entire world and not to a few narrow communities. They are political questions of high and urgent import. But there are representatives of certain countries who seem determined to recognize only their own communities. We judge that their intelligence and general civilization have not developed to such a degree that they can exchange ideas and argue in discussion without causing ruin.

Primitive people and savages do not take readily to discussion. Their substitutes for discussion often resemble the roar of battle or the

pandemonium of a stock market. Discussion gives premium to intelligence and requires large powers of self-control. The intolerant and bigoted have neither the intelligence nor the patience to rule by discussion. The UNO may fail, if they do they are at least entitled to credit for doing their best to avoid bigotry and intolerance. By discussion they learn tolerance. There are other organizations in the world that might profit by giving study to this aspect of the character of the UNO, for had they the power, human rights, except as interpreted by them, would soon disappear frm the face of the earth.

Tolerance is learned by patient and considerate discussion. Only the intolerant, the bigoted, and the impatient demand that the question shall be settled according to their own judgment and wish. But where tradition and unprovable dogma and custom, rule and govern, bigotry is the ruling principle. In such governments the old must not be questioned and the new is viewed with suspicion. Anything that deviates from custom is taboo, and arouses alarm and anger.

Intolerance is stubborn, stupid, and hard to combat. Even in democratic groups where discussion has long been habitual there is enough intolerance. But nations or smaller groups, capable of engaging in thorough and continuous discussions including arguments pro and con, are the most likely to be capable of practising continuous tolerance. We venture to predict that if and when the UNO fails to maintain peace among its members, it will be because some have despised its tolerance and are no longer capable of solving problems by discussion.

Public opinion on questions of general interest is of great importance and is a power in all governments in which the people have a share. But if discussion is suppressed so that disagreements cannot be made known or ironed out, then there can be no public opinion. Only when differences and disagreements have been submitted to discussion can there be public opinion. The UNO is one of the most powerful of the world's forces to create public opinion, and its failure will be laid at the door of those who insist on going their own selfish way regardless of consequences.

Tuberculosis

OF THE 2,000,000 persons examined by mass radiography in Britain during 1948, 95 per cent had normal chests. Only four per 1,000 had active pulmonary tuberculosis. One per 1,000 had bronchiectasis, a chronic and disabling condition of the lungs.

These details are given in the annual report of the National Association for the Prevention of Tuberculosis. The report suggests that each regional hospital board should have a permanent committee and a doctor "of high clinical and administrative ability" to co-ordinate a complete service for tuberculosis and chest diseases.—*B. I. S.*

Jews

ALL China's 9,000 Jews have received permission for their admission without reservation, into Israel, according to an announcement in Shanghai. Important Jewish agencies, particularly the American Jewish Joint Distribution Committee, have been asked by the Israeli Government to co-operate.

Gangrene

HARDENING of the arteries can lead to gangrene if the vessels get so clogged that too little blood gets through. An obvious solution is to remove the clogging obstruction, scrape it out as a plumber would a land pipe, a method that doctors have hesitated to employ because of the danger that dead tissue, calcium and fat-like substances might lead to clotting. However, Dr. Louis Bozy, chief surgeon of St. Louis Hospital in Paris, assisted by others, has split open arteries as much as two feet, scraped out the clogged materials and sewn up the vessels. Up until July 1948 he had operated upon forty-seven patients of whom nine already had gangrene and ten had arteries so badly clogged that gangrene would soon have developed. Operations on arteries in the arms and legs are the most successful, 100 per cent resulting in improvement.

Relief Packages

PAUL COMLY FRENCH, executive director of the Co-operative for American Remittances to Europe (CARE), a non-profit overseas relief agency in the United States, says that the contents of standard food CARE packages have been changed to contain less flour and more meat, fat and sweets. This results from a survey of changing relief needs brought about by successful grain harvests abroad. French also notes that the new package is larger than the previous one and, when used to supplement regular rations, will provide nourishing meals for a family of four for one month. The agency was able to enlarge the food package, he says, due to savings being made now that the Economic Co-operation Administration (ECA) is paying freight charges, as provided for by the United States Congress. In the past two years, CARE has delivered more than 6,500,000 relief packages to sixteen European and Asiatic countries, the American, French, and British zones of Germany and Berlin. Besides the food and special holiday packages, CARE also makes available for shipment overseas packages containing layettes, blankets, knitting wool, infants' food, woollen suiting, household linen and special packages of Kosher, Italian, Greek, and Oriental food.—*U. S. I. S.*

Artificial Heart

REPORTING on heart surgery, Dr. Clarence Crafoord of Stockholm, Sweden, told of the mechanical heart he built that is designed to overcome difficulties in operating on the heart when it is full of blood. The

apparatus, by draining the heart and relieving it temporarily of the job of supplying blood to the brain and its vital network of nerves, should help to make "impossible" heart operations feasible. The artificial heart has been used successfully in experimental operations on animals, Crafoord said, and soon may be tested on humans.—*U. S. I. S.*

Island

THE crew of the 109-ton "Ketch Miena," who arrived in Sydney recently, claim they have discovered an "Island Utopia" whose 900 inhabitants do not even know there has been a war. It is the island of Tikoteia (three miles long and a mile and a half wide), 450 miles east-southeast of the Solomon Islands.

American Indians

THERE are about 400,000 American Indians in the United States today. They are scattered over the entire country and live mostly in their own reservations though at liberty to settle wherever they choose.

Telephone "Book-keeper"

INVENTORS in the United States have perfected an electrical apparatus that can keep a record of thousands of dial telephone calls. It records who made them, what numbers were called, how long the conversation lasted, and then adds up and prints the information for use in billing each telephone subscriber. The machine makes the record by punching holes on reels of paper three inches wide.

Meteorite

AFTER interviewing some three hundred witnesses of the event, a Soviet scientific expedition which has been investigating the report of a meteorite which fell to earth north of Vladivostok in February last year, has given an account of its findings. As the meteorite hurtled towards the ground the light from its long tail was so bright that it rivalled the sun and caused trees and buildings to cast a second shadow. Five tons of meteoric iron, which previously had been travelling in space for an unimaginable period of time, was collected by the expedition. The leader of the Soviet expedition believes that it was a small asteroid, one of the numerous minor planets which revolve round the sun and are situated between Mars and Jupiter.

Hitler's Motor Car

ADOLPH HITLER'S 9,500-pound armoured motor car recently was purchased in Sweden by Christopher G. Janus, managing director of Eximports Associates, Inc. of Chicago. Stevadores reluctantly unloaded it when it arrived in New York. Mr. Janus obtained a licence and fuel for the sixty gallon tank, and started for his home without delay.

Pick-Pockets

MORE than a hundred Chinese pick-pockets picketed the police headquarters in Chungking, China, recently when a local crime drive ruined their business.

Bacteria

UNTIL recently it was commonly believed that no bacteria could live at the North Pole because of the intense cold; however, Dr. Nicholas Polumin, professor of botany at McGill University (Canada), who has just made a flight over the area, has found that there is an abundance of bacterial mould, yeast, pollen, and other living botanical particles in Arctic air.

Icebergs

ICEBERGS normally take two and one half years to travel from West Greenland glaciers to the steamer lanes south of New Foundland.

Bread

AMERICANS consumed 147 pounds of bread per person in 1947, but it was the lowest flour-eating year on record during a prosperous era.

Helium

HELIUM cooled to 457 degrees Fahrenheit below zero is described as a "super fluid" because of its startling properties. It conducts heat better than any other known substance, can leak from between two pieces of optically ground glass held together under pressure, and defies gravity by flowing uphill! It is neither a liquid, a solid, nor a gas.

Highest Balloon

AN UNMANNED "sounding balloon" has risen to 140,000 feet (twenty-six and a half miles), so the United States Signal Corps announced in November, 1948. The balloon carried two and a half pounds of instruments which radioed data on atmospheric pressure, temperature, etc. The maximum altitude was deduced from the pressure signals. The balloon was made of synthetic rubber, and was about seventeen feet in diameter on the ground, but at the maximum altitude it was stretched to about seventy-five feet.

Cabbage for Ulcers

MEDICAL science has found no sure cure for stomach ulcers other than surgery, but Dr. Garnett Cheney of the Stanford University School of Medicine has an anti-ulcer factor he calls Vitamin U, which is found abundantly in raw cabbage. It is also found in celery, raw egg yolks, cereal grasses and in vegetable fats. A dozen patients who were suffering from duodenal and stomach ulcers, to whom a glass of cabbage juice was given five times a day, according to X-ray evidence, were healed in from seven to ten days. Dr. Cheney does not claim that he has found a sure cure, but he admits that the indications are that vitamin U may be such.

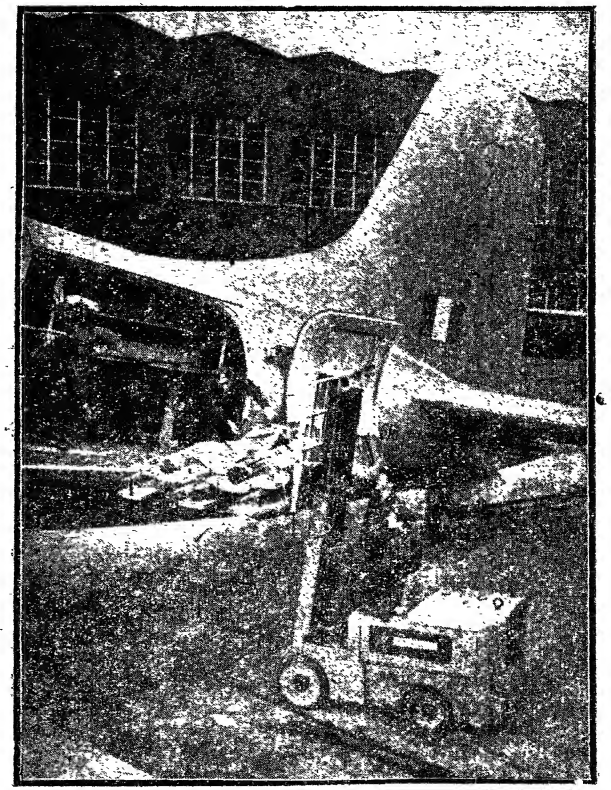
Palm Reading

ORDINARY palm reading may not reveal many facts, but Dr. James F. Brailsford of England says that X-ray pictures of the hand can help in the diagnosis of important body ailments. It can be held perfectly steady for X-ray purposes. There is little tissue between the bones and the camera, hence details photograph more sharply than with deep organic photography. Among the diseases that can sometimes be spotted with radiological palm reading are: Too much or too little activity of the thyroid; nutritional disorders like scurvy and rickets; gout; cancer of the chest, which like some other chest diseases shows up as new bone laid down around normal bone; arthritis.

OUR COVER PICTURE

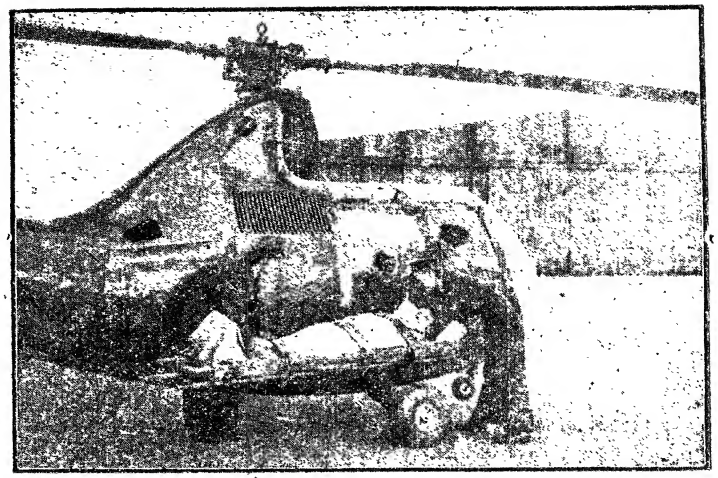
The Cement Marketing Corporation has supplied our cover picture this month. It represents a clean, sanitary creche where the children of working women are left and given good care and attention while mother is at work. Cement construction is not only the sturdiest, but is neat, tidy, sanitary, and easier to keep clean than other material.

Right: Nursing orderlies in an evacuation demonstration by the R. A. F. strap a casualty on to a stretcher on the outside of a helicopter. This method of casualty evacuation is useful in areas where there is no air strip.



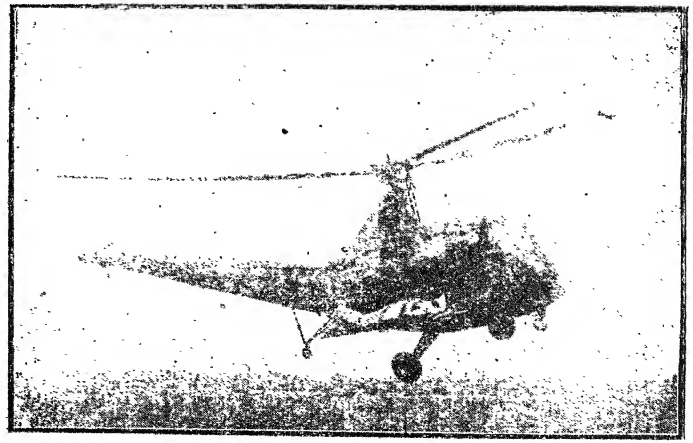
W. N. P. S.

Above: Wounded are transferred to a Hastings air ambulance after being brought from forward areas by helicopter by means of the "Stacatruc." This ambulance can carry twenty-eight stretcher cases and thirty-two sitting cases nearly 2,000 miles without stopping.



W. N. P. S.

Below: A Sikorsky Hoverfly takes off carrying a casualty strapped to an external stretcher. The range of this helicopter is 200 miles so the machine is ideal for work between forward areas and clearing stations behind the lines.



W. N. P. S.

WORRY

WITH bacterial and organic diseases more and more under scientific control, worry is fast climbing toward the top of the list as a cause of death. Literally, of course, its victims die of heart disease, stomach ulcers, thrombosis, and other ailments; but in all too many of these cases it is worry that starts the victim on the downhill road. The habit of worry is as old as mankind, but probably no previous generation has worried as much as has ours. This is serious. But what are we going to do about it?

Many physicians say that from one third to two thirds of all the patients they treat in clinics and in general practice suffer from disorders primarily induced by worry. This is a conservative estimate for many doctors lack time to delve into their patients' private lives. They do so only if a diagnosis of the immediate ailment isn't obvious.

A fifty-four-year-old woman appeared at the Mayo Clinic. In twenty years she had had eight operations. She was of the "nervous type," and psychological tests revealed that she was fearful of meeting problems. When some important issue complicated her life, she invariably "became ill," and had to go to the hospital, sometimes for an operation. By worrying unduly about her problems and refusing to face them, she had gone on for years travelling the road to self-destruction.

Exactly what is worry? It is easier to understand—probably because we all worry—than to define.

Psychologists tell us that anxiety states are chiefly by-products of civilization. In the primitive world, they say, fear was a major emotion. Danger was on every hand. Vigilance was the first law of survival. In those days fear meant one or two things—fight or run. Now it is a different world. Some people still doggedly meet issues face to face—as their forefathers met and fought wild beasts. Most of us do not. Nor is flight a practicable method of handling complex modern problems. It was easy enough for primitive man to run from a poisonous serpent; but can you leave your home, your nagging wife, your heartless boss?

Yet such everyday conditions can produce damage within the body. Your anxiety states, your accumulated frustrations, must have an outlet. But the fellow who "gets it off his chest" by telling the boss off, does so at the peril of his job. He cannot clip the boss a "fast hook with the left" and get away with it. So anger and frustration find outlet by wreaking destruction on body tissues.

Heart disease and high blood pressure are among the most frequent "outlets of worry." A personality study of high blood pressure patients often reveals some deep-seated mental conflict—though a long time may have elapsed before the disease manifested itself.

Another case history—call her Mrs. White—nourished her anger and frustration for many years before high blood pressure finally became chronic. Early in life she had married a stingy, stupid, stubborn man, considerably older than herself. She had one son, whom she was forever shielding from the harsh, critical father. Because of his terrible temper she didn't dare fight with her husband. Her only hope was that her husband would die and leave her in peace. Literally, she "worried herself sick."

How often you hear someone laughingly caution an angry person: "Watch your blood pressure!" Anger or fear is often the body's first step in preparation for a fight. The adrenal glands respond to this impetus by throwing more adrenaline (epinephrine) into the blood stream. The effect is a strengthening of the muscles and an increase in blood pressure. But when there is no fight, and the body is continually under this strain of preparation, this stimulated state becomes chronic, and a condition of tension exists throughout the whole circulatory system.

A group of doctors scientifically proved that "poison" circulates in your blood stream when you are fearful or worried. Blood from patients in a state of fear and anxiety was dropped on a segment of rabbit's intestine kept alive while outside the body. Rhythmic contractions of the rabbit's intestinal muscles were upset. But the same person's blood, when taken in a calm state, had no effect on the rabbit's intestine. Continuous circulation within the blood of the poisonous substance or substances created by the worry state cannot but affect seriously the tissues and organs dependent upon such toxic blood for their nourishment.

Tachycardia (fast heart) and angina pectoris (intense heart pain) are both aggravated by worry. In extremes of anger and fear, not only the blood vessels, but also the heart muscles suffer strain. Let this go on for several years, and you have a "marked heart"—marked for early death.

The functioning of all the ductless glands is also upset by worry. The hormones which they produce are closely related in activity with one another. When one becomes unbalanced, it is believed that none of the others function exactly as they should. Thus it is that the thyroid parathyroid, pancreas, and pituitary glands—which have much to do with the well-being of the entire body—are all much disturbed.

A girl became worried about her engagement to marry. Five months previously, when she had had a routine physical examination, her blood sugar proved to be normal and her urine negative. However, after several weeks of worry over a report that "people with diabetes habitually lose their sex powers," she definitely became ill. Her physician then found her urine sugar 4-plus and her blood sugar 370 (normal is 80 to 120). Worry had actually caused an upset in her hormone balance, and sufficient insulin could not be manu-

MARY JANE KNISELY

DISEASE

factured by the pancreas to prevent excessive blood sugar.

Stomach disorders are common among chronic worriers. Physicians can instantly detect the "stomach ulcer type"—a thin, nervous person who worries a lot. Anxiety can cause an increased flow of hydrochloric acid in the stomach. The purpose of this digestive acid is to break down food, and it is produced normally in response to the entrance of food into the stomach. But when it is produced by worry and has no food to react upon, it seriously irritates the stomach lining. This condition in time may lead to gastric ulcer.

When you are worried or agitated, your food does not properly digest. Rhythmic contractions of the stomach and intestinal muscles are interfered with. Tensions cause the pyloric valve between the stomach and intestine to remain closed. Therefore food churns aimlessly in the stomach. Often the sufferer complains of sick headache.

Even the appendix is subject to a diseased condition caused by worry. Medical literature indicates that the appendix of almost every adult at times exhibits abnormalities. Worry causes functional spasms of the appendix muscles. The patient suffers intense abdominal pain, and may have to undergo an appendectomy.

Even asthma is considered by some authorities as a "worry disease." Originally it was called "asthma nervosa," a clue that early physicians thought it a manifestation of mental and physical tensions. Later the theory of pollens and allergies came into vogue. Current opinion is that all these conditions are factors. It is well known that an emotional upset or worry state can bring on the asthma attack. Fear, anger, and kindred emotions increase the rate and volume of breathing.

It is increasingly apparent that practically all parts of the body suffer from anxiety states. Not only are the heart, blood vessels, digestive and respiratory systems damaged, but the spleen also contracts, and the skin is stimulated. The patient may sweat profusely. Many persons who have worried continually over a period of weeks complain of sudden dizziness, chest pains, tremors, weight loss, marked fatigue, urinary urgency, vomiting, belching, headache, and diarrhœa. Certain forms of eczema may be the result of anxiety, as are some cases of blindness, deafness, and paralysis. Often, more correctly than you know, you may say: "I was blind with rage," or, "I was paralyzed with fear."

Among representative case histories is that of a young bank clerk who had to learn his lesson the hard way. Naturally proud, he felt obliged to keep his wife and child in fine style. On a modest salary he was soon deep in debt. He began seeking a "way out"—considering the idea of helping himself to bank funds. Would he, or wouldn't he? For months the question tormented him. While in the midst of this period of distracting indecision, his wife announced that a new baby was on the way. Our bank clerk fell ill. He became fatigued and had a fast heart, pains in his chest and back, headaches, and dizziness. Fortunately a careful doctor took interest in the matter. Probing into the patient's private affairs, he uncovered the haunting worry factor. All the patient needed was a sensible adjustment of his living conditions and a pointed lecture on life values.

As a result of a ten-year survey made at Presbyterian Hospital in New York, it is concluded: "The greater the organic damage the less the anxiety." People who accustomed themselves to ill-health worried far less than those who did not. That deadly malady, tuberculosis often is called "the cheerful disease," because its victims show few signs of anxiety. Anxieties are not so much concerned with actual tragedy as with our vague fears of it. When the worst has happened, worry has little or nothing to feed on.

The case of an inventor is pertinent. He complained of poor vision and spots before his eyes. Doctors diagnosed these symptoms as glaucoma. During the examination he told the doctor of his home and financial worries. He feared he would lose everything before he realized any return on his patent. For several months thereafter the dortor did not see the inventor. Then when they met casually in a restaurant the doctor inquired about the inventor's eyes. "Oh, my eyes never give me any trouble," the inventor replied. "You know, I *did* lose all my money, and my home, too. In a way I am glad of it. When I did not have anything to worry me, my eyes improved immediately!"

A strongly developed sense of humour is your best weapon against worry; a joke is a good pain killer. "Be it ever so humble," a good home is good medicine. Hobbies, adventure, athletics, and change of scene are helpful. Above all, the worrier must learn to forget himself. He must make other people, *not himself*, the main focus of his attention.

There is no guarantee against the tragedies of life, but what actually happens to you is not so important as the way you react to adversity. As for the things that may happen to you in the future—well, worry certainly will not prevent them. You have only one life to live. Why not live it joyfully instead of worrying yourself to death?

USE AND ABUSE OF SUGAR

GEORGE CORNFORTH, Dietitian

THERE are two kinds of sugar—fruit sugar, found in fruits and honey, and cane sugar, found in sugar cane, maple sap, beets, and other vegetables. Perhaps the latter might be called vegetable sugar, because it is found in stems and roots. We might make another classification of sugar, namely, natural and concentrated, or refined. Both fruit sugar and cane sugar, as they occur in fruits and vegetables, are natural sugars. The concentrated sugars are granulated sugar, maple sugar, maple syrup, sweets, and confectionery. If we should eat both kinds of sugar in no more concentrated form than that in which they grow, we would not eat enough to do us any harm. But in the concentrated form of sweets, confectionery, syrups, and foods sweetened with granulated sugar, its taste is so much enjoyed and it is so nutritious that it is difficult for many people to refrain from eating too much.

The concentrated vegetable, or cane sugars, are irritating to the mucous membrane lining of the alimentary tract, and tend to produce gastric catarrh. One sometimes wonders if there is some connection between the prevalence of appendicitis and cancer and the excessive amount of sugar eaten. The presence of a large amount of sugar in the stomach interferes with digestion, as a concentrated solution of sugar tends to preserve food. The natural, or diluted, forms of sugar, as found in honey and fruits, are not irritating and do not interfere with digestion. On this point I quote from Dr. O. S. Parrett:

"Cane sugar, when used freely, does show a marked tendency to irritate the mucous membrane of the digestive tract. It favours the development of a catarrhal condition of the mucosa, and when used in large quantities, is doubtless as grave a dietetic error as the use of meat. Experimentally, a solution containing fifty grams of sugar, which is a little less than two ounces, dissolved in a glass of water, when given to a patient who had been having trouble with digestion, was found to be vomited up after a little time so sour and acid that it set the patient's teeth on edge. The same patient was then given invert sugar, which is the natural sugar found in honey and sweet fruits, and the same quantity of sugar was found to digest perfectly well, without any annoying symptoms whatever. Experiments on animals, such as dogs, have shown this same tendency for cane sugar to be irritating to the mucous membrane. The question of sweets is simply that of securing the right kind of sugar."

Cane sugar is readily absorbed, and if taken in excessive quantities may be absorbed before being digested. There is no digestive ferment in the blood to digest it, and so it becomes a foreign substance in the blood which must be eliminated. Fruit sugar, being predigested, is ready to be absorbed into the blood without digestion, and it is not a foreign substance when absorbed; although if taken in excess it may be absorbed more rapidly than it can be used by the body, and will be eliminated by the kidneys.

Another important difference between the natural and the concentrated sugars is that the natural sugars are accompanied by food minerals, which are indispensable to

health, while the process of refining and concentrating sugar removes these health-preserving substances, so that a diet which includes large quantities of sugar is sure to be lacking in food minerals. Gur and brown sugar are open to the objections that apply to concentrated sugars, but they do not have the food minerals removed from them as does granulated sugar.

Sugar-cane juice is found to be health promoting when fed to babies, because it provides the food minerals, which are so necessary to build healthy bodies. However, when cane sugar is included too largely in the diet, it will make the building of sound teeth impossible, for it will take calcium right out of the inside of the teeth. A diet in which cane sugar is too largely included lacks calcium, but sugar-cane juice contains calcium.

Concentrated sugar is so nutritious that it quickly satisfies, and takes away the appetite. For this reason anyone who eats quantities of sugar and sweets, especially between meals, is not likely to eat enough wholesome food to maintain health. One chocolate cream, for instance, furnishes almost 100 calories; a quarter of a pound of chocolate creams furnishes about 500 calories. One square of chocolate furnishes 175 calories; a quarter-pound bar furnishes 700 calories. About 2,500 calories is the food requirement for a day, or about 800 calories to a meal. One can readily see what a quantity of nourishment is taken by eating a little chocolate between meals, which will detract just so much from the appetite for wholesome food at meal time, and it is more fully demineralized than white bread or white rice.

Only Fault of Granulated Sugar

An average lump of sugar contains as much sugar as a yard of sugar cane, but what a difference! A child will spend all day chewing on a yard of sugar cane (he cannot consume it in less time); and as he chews, he swallows large quantities of saliva, the ferments of which help to digest the sugar. He also swallows a considerable amount of woody fibre that provides valuable roughage. In contrast, a child can eat the same amount of sugar in sweets, chocolate, cake, etc., in a minute, or an enormous amount of excess sugar in a few minutes; and this sugar receives the minimum of mastication and insalivation. I quote:

"In many respects white sugar is an ideal food, for it is cheap, pure, and not easily contaminated. Its advantages from the standpoint of a chemist are very well stated in the words of the late Edwin F. Slossen, as follows: 'Common sugar is an almost ideal food; cheap, clean, white, portable, imperishable, unadulterated, germ-free, highly nutritious, completely soluble, altogether digestible, easily assimilable, requires no cooking, and leaves no residue. ... Its only fault is its perfection. It is so pure that man cannot live on it.'"

We are sometimes reminded by people who wish to make an excuse for satisfying their craving for sweets, that sweets are given to soldiers to enable them to work hard or make forced marches. It is true that sugar and other sweets are concentrated foods, and may be used to support a short strenuous effort, the body drawing on its existing supply of minerals for the time being, but that would not do for a continuous diet. Soldiers tell us that the amount of sugar and sweets they received was limited in amount.

Speaking of the craving people have for sugar may lead some to ask if that craving does not indicate that the body needs sugar. Not necessarily. It may be a cultivated taste. The craving for alcoholic liquors or tea or coffee does not indicate that the body needs these poisons. Rather, the craving for sugar may indicate that the body needs minerals that it is not getting.

Constructive Aids in Using Less Sugar

To guard against the excessive use of sugar, I would offer the following suggestions: Persuade yourself to satisfy your craving for sweets as largely as possible with natural sweets—raisins, prunes, dates, figs, apples, sweet oranges, pears, bananas, honey. These contain most valuable minerals, as well as sugar. Eat no sweets between meals. If sweets are eaten let it be only one or two pieces eaten at the end of a meal as dessert. Eat only one dessert with a meal.

A small amount of sugar, just enough to make it palatable, may be used to sweeten cooked and canned fruit, not enough to preserve it. Preserves and jellies should be treated as sweets, just a little being eaten occasionally as a part of a meal, as an accompaniment to a meat substitute, or with cottage cheese, or in desserts.

Suggested Food Sweets Recipes

Grind together through a food chopper, using the finest cutter, three parts raisins to one part pecan nuts or other nuts. Press into the shape of caramels.

Use figs and nuts in the same way.

Use three parts stoned dates and one part shredded coconut ground together. Form into balls or cubes.

Stuff dates with peanut butter, with which a little strained honey and vanilla have been mixed.

Soak prunes overnight in enough water to cover; then stew them slowly one hour in small amount of water. Remove stones from the prunes. Fill with toasted almonds. Serve with whipped cream.

A ripe, mellow, sweet banana sliced over a dish of cereal does well in taking the place of the sugar that so many people like on cereal, or sprinkle raisins or chopped dates over it. Pitted dates cooked in cereal or mixed into dry cereal makes a delicious combination.

For a very palatable blend of flavours try grinding together figs, dates, raisins, walnuts, maple sugar, coconut, and a little citron and peanut butter. Candied cherries may be added if at hand. Form into cakes or squares.

Try peanut butter and strained honey stirred together, as a spread for bread.

Molasses is valuable for its mineral matter, especially iron, and also for its laxative effect.

For a drink try honey orange nectar—juice of one or more oranges, juice of one lemon, one half cup of strained honey, and water enough to make one quart liquid. Chill before serving.

TEMPERATURE

PULSE

RESPIRATION

BERTHA A. BORGE, R.N.

IN THIS age of specialization it seems that few of us retain a family doctor as did our parents. The general practitioner is apparently outmoded. If we have a stomach disorder, we call on a stomach specialist; when or if our heart causes us discomfort, we visit a heart specialist. We go to an obstetrician to have our babies, and then to a pediatrician to care for the child. Each knows his field to perfection. But whom do we go to see when we are not sure where the trouble lies?

We find one day that we do not feel well. What is wrong? Well, we are not exactly sure, head aches, throat's a little sore, just feel "punk" all over. We call it general malaise (that sickish but I don't know where, feeling). We wonder whether we should call the doctor. Maybe so, but which one—there is where the problem lies. Perhaps if you check up on yourself, you might be able to decide whether to call Doctor Jones, or Doctor Smith, or maybe you just need to rest for the day. Your answer is all in knowing the cardinal signs!

There are three cardinal functions with which you should be familiar. They are: (1) Your body temperature, (2) your pulse rate (the number of heart beats per minute), and (3) your respiratory rate.

We speak of a normal temperature, pulse, and respiration, because they are constant and conform with such great regularity to a standard of health. Each is controlled by a mechanism so delicate and precisely adjusted that it responds almost immediately to any abnormal condition in the body. Any departure from normal is considered a sign, or symptom, of disease.

BODY TEMPERATURE

The body temperature is its degree of heat, and is the balance maintained between the amount of heat produced by the body and the amount lost. It is the result of the oxidation or combustion of food—chiefly fats and carbohydrates (starches and sugars), but also of proteins—in the body. The process is very much the same as that which occurs in your furnace when burning coal, oil, or gas. It produces heat; so also the burning of fats, carbohydrates, and proteins produces heat in our bodies.

The normal body temperature is 98.6 degrees on a mouth thermometer. If taken in the axilla (under the arm), it is slightly lower; if taken by rectum, it will be one degree higher. Children's temperatures should always be taken by rectum. Your temperature is lowest between 2 a.m. and 6 a.m. (a critical hour for the sick, sometimes requiring them to have another blanket, hot drink, and so forth). It gradually rises during the day, because of the intake of food, plus exercise, reaching the maximum between 5 p.m. and 7 p.m., and falls again during the night.

A *slight* departure from 98.6 is not considered abnormal. Any temperature from 97 degrees to 99 degrees is not usually significant. However, any departure below 97 or above 99 degrees, if accompanied by compatible pulse and respirations, indicates that something is wrong.

High temperatures persisting any length of time are always serious. Recovery seldom occurs when a temperature reaches 107 degrees or over!

THE PULSE

The pulse is taken while the patient has the thermometer in his mouth. This is done by placing the forefinger and second finger of your left hand on the patient's wrist directly below his thumb. Do not use your thumb to take the pulse, for there is a pulse beat in your thumb, and you are likely to record your own pulse beat.

In the event it is not possible to take the pulse beat at the wrist, there are a number of other areas. These are at points where large arteries come near the surface, such as the temple, the side of the neck, the femoral artery (inside the thigh), or the dorsalis pedis artery (interior of the ankle).

For ordinary purposes you should note the rate and rhythm of the pulse. The normal pulse rate for an adult is seventy to eighty, but may range from fifty to ninety beats. The rate of the heart-beat varies with sex, size, and age. Man's average pulse is seventy; women's is seventy-eight to eighty. Tall people have a slower pulse than short people of the same age. The pulse rate gradually diminishes from birth to old age, and begins to increase once more in extreme old age. Before birth the pulse beat of the unborn child is around 150 a minute.

The pulse is the distension of the arteries produced by the wave of blood forced through the artery by the contraction of the left side of the heart. This is the working period of the heart, and the contraction is called the heartbeat. Every beat of

your heart forces approximately three ounces of blood into the large artery leaving the heart, which is called the aorta. After each heartbeat there is a resting period of the heart.

If anything interferes with the function of the heart, with the blood, or with the elasticity and contractibility of the blood vessels, there will be a change in the rate of your pulse. At one time, not more than seventy years ago, the pulse was the only means available to study the condition of the heart. Now the physician is able to take electrical tracings of the heart's action.

Respiration

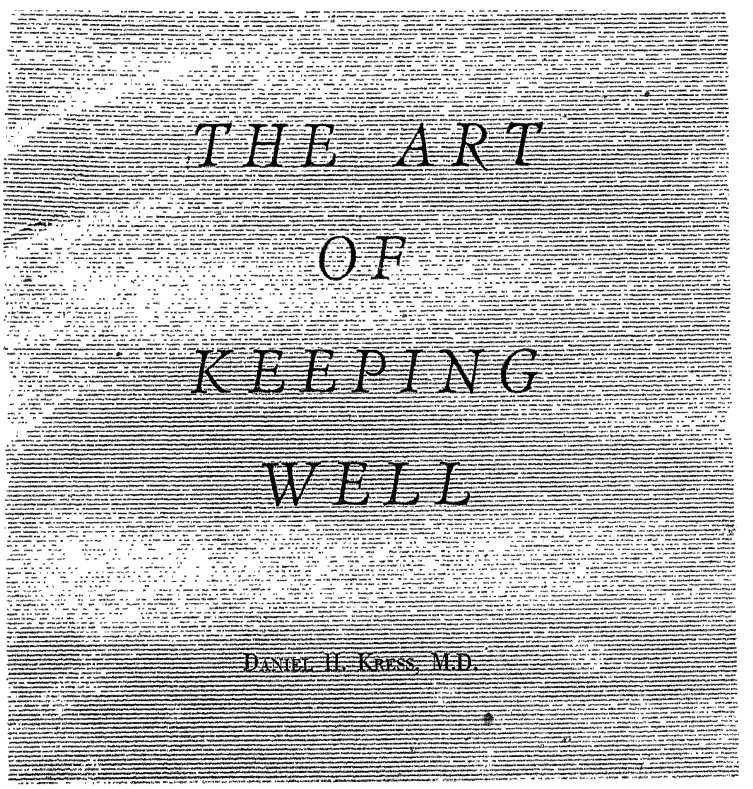
The last cardinal function is the respiration, or the rate of the interchange of gases, the absorption of oxygen, and the elimination of carbon dioxide. In all living things life depends upon these chemical changes in one form or another. The body can survive for a considerable length of time without food, but not even for a few moments without oxygen.

By means of the respiratory system, oxygen is absorbed into the blood and the carbon dioxide is eliminated from the body. Normal breathing consists of a rhythmical rising and falling of the abdomen and chest walls. Usually in the adult it is carried on unconsciously eighteen times a minute, a child twenty to twenty-five times a minute, an infant thirty to forty times a minute. We have found it best to take the respiratory count at the same time that we appear to be taking the pulse. This is done because people have a tendency, when aware that you are counting their respirations, to quicken them a little; this will give you a false count.

An individual's emotions have a decided effect on their respirations, and these may increase to sixty or more a minute if one is nervous or excited.

Elevated temperatures will cause the respirations to increase. Pneumonia and inflammatory diseases of the lungs affect the circulation which in turn will increase the rate of respiration. Conditions which reduce the amount of oxygen, such as high altitudes, or increase in the demand for oxygen, will cause an increased respiratory rate. Obstruction of the air passage by a foreign body or by increased secretions will also change the rate. The respiratory rate will decrease or become irregular if there is an increase in pressure about the brain. Drugs such as opium will slow down the breathing. Diabetic coma will cause a person to have slow and irregular respirations, so will uremic poisoning, which follows kidney failure. These conditions seem to produce exhaustion, and finally failure of the respiratory centre located in the brain.

These then are your three cardinal functions, which are vital to health! Know them and know what is the normal body temperature, pulse beat, and respiratory rate. If someone in the household is not feeling well, place a thermometer under his tongue, take his pulse and respiration, and if they are abnormal, you should seek the help of a physician.



AIR, food, and exercise are the three great essentials for health. The most important one of this trio may be said to be air. It is possible to live without food for days, and without exercise for months, but to attempt to do without air for only a few minutes would result in death. Fortunately, air is free to all. There is, therefore, no excuse for air starvation; and yet the majority of people unconsciously deny themselves of this blessing. Few really appreciate sufficiently the importance of air to appropriate the quantity and quality they are entitled to and must have to keep in health. Even the food we eat is valueless without air. Of what value is a furnace that is filled with fuel without the admission of air? Without air there can be no fire; so, there can be no heat, and therefore no energy can be liberated. The fuel remains a dead mass. If the drafts are only partially open, and an insufficient amount of air is admitted to the fuel in the furnace, the fire burns low, not much heat is produced, and very little energy is liberated.

This is equally true of the human body. It is really a furnace—a liv-

ing furnace. Food is its fuel, but the good derived from the food depends upon the amount of air admitted to it. Without air there can be no heat, no energy, and no life. When God made man at the beginning, He breathed into his nostrils the breath of life, and man began to live. But man had to continue to breathe in this God-given breath of life in order to continue to live. The body without the breath is dead. Air must be pure to be of the greatest value. The most effective way of introducing poisons into the blood is through the lungs, or by inhalation. This is recognized in surgery. Chloroform and ether are employed to produce anæsthesia. After a few minutes of inhalation, the patient becomes irresponsible for what he may say or do, and then he becomes unconscious and ready for the operating room and the knife of the surgeon. It is possible to inhale a sufficient amount of poison that may be in the air that surrounds us to produce irresponsibility.

Living as we do in cities and in closed offices and sleeping rooms, it is impossible to obtain pure air. Man cannot be at his best physically, mentally, and I might even say morally and spiritually, and habitually breathe impure air. Every living creature eliminates from the lungs and through the skin poisons which are destructive to it. This shows the importance of having in every room occupied for any length of time an inlet for pure air, and an outlet for impure air.

There are those who are afraid of night air and prefer to keep the windows closed at night. It may never have occurred to them that the only kind of air that can be had at night is night air. The fact is that night air in our cities is purer than the day air. During the day furnaces are burning briskly and the smoke from them contaminates the air. The automobile traffic and the great mass of living beings on the street also tend to render the day air impure. At night there is quiet on the street, the fires in the furnaces are allowed to burn low or die out; automobiles are stored away for the night, and smokers are shut up in their bedrooms. The outside night air is therefore the purest kind of night air to breathe. He who is wise will take advantage of this and will see that the windows are kept open in the sleeping room during the night.

Deep inhalation of air in and of itself is of little value. Oxidation takes place, not in the lungs, but in the tissues of the body. The oxygen from the air conveyed to the lungs must be carried to the tissues in order to be of benefit. Exercise creates the demand for air. It is impossible to exercise without breathing deeply.

In speaking of the importance of exercise, I do not mean the vigorous exercise obtained in the modern gymnasium. This may be beneficial, but frequently it does harm. There is always the danger of overdoing.

Merely beating the air can never take the place of the *incentive* that leads men and women to work in order to supply the needs of their loved ones. The apostle said: "Let him that stole steal no more: but rather let him labour, working with his hands, . . . that he may have to give to him that needeth." Such an incentive makes work a delight and a pleasure.

The difficulty today is that so many are earning their bread by the sweat of the *brain* instead of the sweat of the face, as God designed they should. When God made man, He did not intend that he should be shut up within four walls, seated on a revolving chair. He placed him in a garden "to dress it and to keep it."

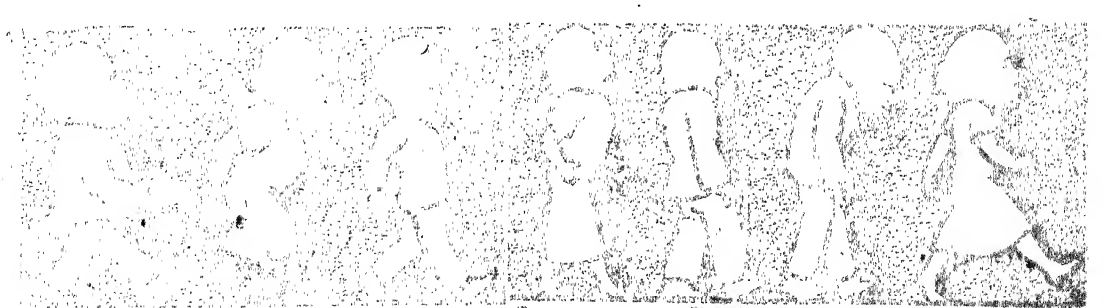
Every family should aim to have a small piece of land to cultivate. A portion of time spent each day in such occupation is highly beneficial.

Exercise creates the demand for air and for food. The working man never complains of lack of good appetite, neither is he troubled with sleepless nights; for "the sleep of a labouring man is sweet, whether he eat little or much."

The one who spends his time on a swivel chair in a poorly ventilated office naturally loses his appetite. Nature takes the appetite away. The apostle said: "If any would not work, neither should he eat," and he might have added, "neither shall he sleep."

There is no better way of improving the appetite than to engage in out-of-door work. There is no better means of inducing sleep than to work in the soil. In my fifty years' practice of medicine I have had a great many patients who were troubled with insomnia. Among them all, I am not able at this moment to recall *one* who had a large family and who had to work hard out-of-doors to provide them with the necessities of life.

Civilization has made it impossible for all to engage in work on the farm or in the garden or to do physical work in the open air. Many will have to continue to earn their bread by the sweat of the brain, and are doomed to indoor, nerve-wrecking office work. Those who are so unfortunate can, however, derive some benefit by taking a few simple exercises. Seated at the desk, the body may be kept erect and energized instead of permitting the body to bend forward, a posture which interferes with respiration and causes the blood to flow sluggishily through the stomach and liver, thus slowing digestion. Walking erect and sitting erect cause freer circulation of the blood through the brain and tend to sweep the cobwebs from it, enabling better thinking.



ARTHUR WARREN

IF THE Sphinx had suddenly come alive, surely his stony sides would have shaken with laughter at the sight!

Here was an old country shepherd with his staff, walking by the side of a donkey which carried his wife and two children. And his mission was to break down the might of Pharaoh and his disciplined army, and set free close on a million slaves.

At the age of eighty!

Ha! Ha! It was too ludicrous altogether.

Yet in a few weeks it all came to pass. Moses, at eighty, was God's choice of a man to face mighty Pharaoh, and lead Israel into the Promised Land.

So there is no need to think that a man has passed his prime when he has reached the age of forty.

It is true that when the present century dawned it was not unusual for workers to have misgivings when they neared the age of forty. "It's hard for a forty-year-old to get work," they thought. "Only young men are wanted now."

That sounds amusing when we read that sixty-three-year-old Sir Douglas Mawson was (in 1944) planning his fourth expedition to the Antarctic!

It makes it look as if the forty-year-old man may have his best days before him. What do you think?

If you are almost, or turned forty, it will make you feel young and hopeful to look at some of the seventy-year-olds and their accomplishments.

Here is courageous seventy-year-old George Locke, for instance. He saw a three-year-old child fall into the water at Cowes, in the Isle of Wight, and promptly dived in, swam out to the drowning boy, and saved him.

A few days ago I shook hands with one of my old teachers, just recovering from a severe operation at the age of seventy-five or seventy-six. We smile at his spirit when he tells us that he has "just been talking to the secretary" about his future work.

Over in Canada, Prime Minister, Mr. W. L. Mackenzie King, with steady voice and firm hand carried forward his onerous duties with energy and dispatch until he had passed his seventy-first birthday.

In England, Lord Ashfield, just about the same age, is still directing the London Passenger Transport Board.

Then who could forget Mr. Winston Churchill's energy and courage during the late war? What should we have done without him? He turned seventy-three on November 30th last.

So whether you are in your forties, fifties, sixties, or seventies, there is every reason to pluck up courage, and go forward in new hope.

Yes, even the eighties are often fruitful years, as they were with Moses in the days of old.

There is Charlie Brower, right up on the shores of the Arctic Ocean, at Barrow. He has been running a well-stocked store, and has been helping explorers for many a long year. Now, with his eighty odd years, he probably knows more about the Arctic coast of Alaska than anyone living.

Rolla H. Crain, of Ottawa, Canada, started in the printing business as quite a young boy. In those far-off days of the 1870's he printed cards on a hand press in a room in his own home. Now he is eighty-one, and "is developing plans for the extension of his business."

Frederick W. Goudy is still designing types at the age of eighty. And they are fine types, too. He has just completed his 121st design.

And Sir Bernard Partridge, who was *Punch* Cartoonist for fifty-four years produced almost 2,500 cartoons, carrying on almost to his eighty-third year.

When John Wesley was eighty-three he complained that he could not read or write more than fifteen hours a day without hurting his eyes. When he was eighty-six he was ashamed to have to admit that he could not preach more than twice a day. But he still rose at 5:30 a.m., and rode horseback thirty to fifty miles a day.

In 1946 a deputation of industrial experts from India arrived at Liverpool to study the trade of Britain. They were headed by Sir M. Visvesvaraya, aged eighty-six.

"I used to work with a man so tall and thin they called him 'Hammer-shaft.' He was seventy-three and I was about thirty. But my! Old 'Hammer-shaft' kept me sweating to keep up with him. But I met a friend just lately and he told me that 'Old Hammer-shaft' was still working away."

Working away at ninety-three! Bravo, "Hammer-shaft."

At Buckinghamshire horticultural show four prizes were won by a ninety-year-old gardener, Mr. J. Tompkins. At Keelby, Lincolnshire, Mr. George M. Thompson was re-elected as rural councillor at the age of ninety-two.

But what do you think of this: The authorities of Oakland University, California, found that an old lady of ninety-one had actually applied to take up a "refresher course" at that advanced age. Congratulations to you, Clara Paulding!

No! there certainly is no need to think you are getting old at forty. Your best years may lie just before you. Trust your life to God, work intelligently, live simply, regularly, and cheerfully, and, who knows—happiness and success beyond your brightest dreams may yet be yours.

Man—

MAN is made up of his physical structures and all his actual and potential activities. These activities, called *life*, give the human body the ability to keep itself in working order. The various tissues and organs of the body work together, mutually dependent on each other, to keep conditions within the body most favourable to this working together. This most favourable bodily condition is called *health*.

In these metabolic or physiologic activities, the body is dependent upon energy from the sun, oxygen from the atmosphere, and moisture and chemicals from the earth. In intellectual, social, and moral activities, man is dependent upon mankind. In spiritual activities, man is dependent upon forces beyond human understanding.

The materials used in the construction of the human body are 95 or 96 per cent air and water and 4 or 5 per cent elements from the soil. A person weighing 150 pounds is composed of approximately 97.5 pounds of oxygen, 27 pounds of carbon, 15 pounds of hydrogen, 4.5 pounds of nitrogen, 2.4 pounds of calcium, 1.5 pounds of phosphorus, 0.45 pounds of sodium, 0.45 pounds of chlorine, 0.476 pounds of sulphur, 0.075 pounds of magnesium, 0.006 pounds of iron, and 0.744 pounds of iodine, copper, cobalt, potassium, manganese, boron, fluorine, and other elements. He acquires these 150 pounds of chemicals by breathing air, drinking water, and eating plants, or animals that consumed plants. The matter consumed is ingested by him in five forms: *Carbohydrates* (compounds containing carbon, hydrogen, and oxygen), *fats* (compounds containing the same elements as carbohydrates but in different combinations), *proteins* (compounds containing oxygen, carbon, hydrogen, nitrogen, and frequently sulphur, phosphorus, and iron), *mineral elements* (found partly in combination with proteins, fats, and carbohydrates, and partly as salts), and *vitamins* (compounds needed in small amounts for proper functioning of the body).

All these constituents come from plants, and plants obtain them from the atmosphere and the soil, with the help of energy from the sun. So in humility man must acknowledge his dependence for his physical existence upon sunshine, rain, air, and the dust of the earth.

The food energy requirements of the average adult are best satisfied if approximately 60 per cent is taken as carbohydrates, 25 to 30 per cent as fats, and the remainder as protein, minerals, and vitamins. These requirements can be obtained in a diet of fresh fruits and vegetables, whole cereals and nuts, milk, and eggs; provided, of course, that these foods are derived from soil that supplies the normal mineral content.

Let us consider the processes by which the body maintains health, first briefly reviewing the route taken by food in becoming a part of the body.

Metabolic Activity

The first process is digestion of the food preparatory to its absorption into the body fluids. The alimentary tract, in which both digestion and absorption take place, is a tube about thirty feet long extending from the mouth to the anus. By both physical and chemical action, solid foods are broken down into simple forms that can pass through the lining of the intestines.

The digestive process starts in the mouth, where the food is broken up by chewing and where the saliva moistens it and begins to convert starch to sugar. The taste and odour of food and the act of chewing stimulate the flow of stomach digestive juices and start peristalsis, a series of wave-like muscular contractions that keep the food moving downward. The stomach serves as a temporary storage depot for food, and, meanwhile, by the churning action of peristalsis, mixes the food with the digestive juices, whose function is chiefly to initiate the disintegration of the proteins.

The partially digested mass passes into the small intestine, where digestion is completed through the action of the various digestive fluids of the pancreatic and intestinal juices activated by the bile. Proteins are broken down to amino acids, fats to fatty acids and glycerol, and carbohydrates to simple sugars. Absorption of these products takes place by osmosis and chemical activities in the lining of the intestine.

Leaving the intestinal lining by way of the blood and the lymph, the absorbed food is carried to the body cells. Most of this absorbed food passes through the liver, which processes it to make it more suitable for supplying the needs of the body cells. The liver also changes unneeded substances into compounds suitable for excretion by the bile, kidneys, and lungs. In addition, the liver is important in supplying the body's energy needs when no food is being absorbed. It normally maintains a store of carbohydrates available at a moment's notice to supply quick energy in an emergency. For the long pull when meals are far apart, the liver can take fats and proteins mobilized from stores in other tissues and convert them into energy-forming materials.

Nutrients are carried to the body by the blood, from which they pass by osmosis through the partially porous walls of the cells. The amino acids are combined in innumerable variations to build the body proteins. Carbohydrate is utilized in muscle-energy production and heat production; and if there is too much, the

remainder is converted into fat and stored in cells that seem to have fat storage for their function. Some of the fatty acid and glycerol is used for energy production, and some is rebuilt into fats and stored. Iodine is used in forming the secretion of the thyroid gland. Calcium and phosphorus are employed in building the teeth and bones. Iron is used in making the hæmoglobin and other substances that carry the oxygen needed for the burning of fats and carbohydrates. These are a few examples of the many processes taking place in body cells. The wastes from these processes are carried off by the blood, and by the lymph, which eventually flows into the blood, and are eliminated through the lungs, kidneys, colon, and sweat glands.

The blood is supplied with oxygen and cleared of carbon dioxide and other volatile wastes in the lungs, where the blood and air are separated by membranes of the utmost delicacy, with an area twenty-five times that of the skin surface of the body. Over this wide area of thin membrane, gases can pass freely between the air and the blood. The blood is enabled to carry oxygen efficiently because of the hæmoglobin in the red blood cells that are formed in the bone marrow. Like a truck that carries a pay load both ways, the hæmoglobin is able to carry away from the tissues more of the carbon dioxide waste after it has given up to the tissues its load of oxygen.

The blood is carried to and from all the tissues of the body through a system of tubing made up of muscular and elastic tissue. The motivating force of blood circulation is a specialized muscular portion of the tubing which we call the heart. The distribution of the blood in the various parts of the body is determined by the force of gravity and the changing calibre of parts of the tubing. The blood transportation system between the parts of the body carries food, wastes, heat, hormones, antibodies against foreign substances, and the white corpuscles that fight infection. The blood is the principal regulator of the distribution of water in the body. The blood can even plug holes in the system of tubes, arteries, and veins through which it circulates.

Surrounding the organs and tissues of the body is the skin, which guards the tissues against excessive dryness and wetness, heat and cold, and invasion by parasites, such as bacteria and fungi. In its functions the skin is served by the blood and blood vessels.

Using the facilities of the body systems and functions already mentioned, the bones, ligaments, tendons, and muscles are supplied with substance and energy to move the body as a whole from place to place as well as its parts in relation to each other.

Co-ordinating the Body Processes

So far there has been no mention of any means of co-ordinating the activities of the various organs. The logical point at which to start a sketch of this co-ordinating apparatus is with the autonomic nervous system. This is the part of the nervous system which, in conjunction with the glands of the endocrine system, regulates those intricately automatic functions and adaptations that are continuously taking place in the body independent of the consciousness and the will. These are effected by nerve cells situated in some of the organs themselves, in the spinal cord, and at the base of the brain. The stimuli for these activities come by sensory nerve fibres, carrying impulses that depend on local conditions in the body tissues and organs.

The two types of tissue motivated by the autonomic nerves are the involuntary muscles, such as heart muscles, and the glands. All the functions of the internal organs (called viscera) are performed by these types of cells.

The two divisions of the autonomic nervous system—the sympathetic and the parasympathetic—are mutually inhibitory and co-operative in maintaining balance and harmony among the parts of the body. Broadly speaking, the parasympathetic is in charge during times of repose and building up body energy. In times of emergency and energetic action, the sympathetic assumes dominance. That is, when the body is in a state of serenity, the parasympathetics are in the driver's seat. The heart and respiratory rate are relatively slow. Much of the blood supply has been diverted from the brain and muscles to the viscera placidly carrying on the vital processes.

Now an alarm is sounded. One or more of the senses, usually the tactile, auditory, or visual, bring a warning of impending danger. The sympathetics take the reins. The heart and respiration speed up rapidly to accelerate the circulation of blood and supply the increased need for oxygen. The blood is drained from the viscera and sent to the muscles, the eyes, and the ears. The adrenal gland secretes adrenalin to sensitize the motor and sensory nerves and release sugar from the liver to supply the muscles with fuel. The whole body is mobilized for action.

The endocrine glands and their chemical messengers, the hormones, to some extent are under the control of the hypothalamus. This highest centre for integrating autonomic nervous system activity is situated near the base of the brain. The front portion of the pituitary, which receives nerves from the hypothalamus, affects growth and the utilization of body stores of carbohydrate, fat, and protein. It also sends chemical messengers to stimulate the thyroid, sex

FEARFULLY AND WONDERFULLY MADE

Harold J. Hoxie, M.D.

glands, and cortex of the adrenals. Each of these endocrine glands produces one or more hormones necessary in maintaining the body economy in a state of health. Other endocrines essential in maintaining satisfactory internal body conditions are certain pancreatic cells, which make insulin, the parathyroids, the liver, and the posterior pituitary. In general, the hormones are effective in the long-range adaptations, whereas the nervous system carries out those adaptive reactions where rapid response is required.

As long as the vital processes are carried on peacefully and in orderly fashion under the direction of the autonomic nervous system and the endocrines, the consciousness pays no attention whatever to them. The consciousness is burdened with a host of responsibilities and cares having to do with the body's relation to its external environment and has not time to be bothered constantly with such questions as when to inhale and when to exhale, how high the blood sugar should be, how fast the heart should beat, and so on. And if it did have time to take over this responsibility, what would happen if the central consciousness forgot to tell the lungs to inhale and the heart to pump blood?

Mental Activity

When something goes wrong in the body, as when there is a serious malfunctioning of an organ, the stimuli imparted to the sensory nerves are heightened so that they break through to consciousness and are carried to the brain as sensations ranging from vague discomfort to acute pain. The brain is in contact with every tissue of the body by means of sensory nerves. Besides the receptors in the viscera, there are special fibres in the muscles, tendons, joints, ligaments, and inner ear which supply the brain with information about the position of the body and its parts. There are also the organs of special sense—vision, touch, temperature, hearing, smell, and taste—which inform the brain of conditions outside the body.

The brain receives all these data, evaluates them, sorts them out into classifications, associates some data with others, draws conclusions, makes decisions, and sends out impulses over the motor nerves to carry out appropriate actions. Each such action of the brain in response to stimuli leaves a permanent change in the inter-relations of the brain nerve cells. These changes constitute memory and influence future reactions.

The brain of man is by far the most highly developed organic tissue in the world. Each cell of its estimated sixty million is connected by tiny nerve fibres to many other cells. The brain is connected to every part of the body by both sensory and motor fibres. It is the seat of the reason and the will. It is the chief physical instrument of the intellect and the spirit. Despite its exalted role, however, it is a piece of physical tissue subject to all the environmental influences to which all other tissues are subject. Its highly specialized function and intricate structure make the brain more susceptible to injurious conditions than most other tissues. In addition to its connection with all other parts of the body through the nervous system, it is connected with them also through the blood and the lymph. It draws its nutriment from and discharges its waste into the same circulating fluids as every other body tissue, regardless of location or function. The blood and lymph inextricably bind the welfare of the brain to the general health of the body. The difference between fresh air and foul, by reason of its effect on the quality of the blood, can make the difference between an alert and a sluggish mind. Prolonged fatigue, chronic infection, or nutritional deficiency can impair the reasoning faculties, dull the fine edge of moral discrimination, and induce even more serious mental disease.

Emotion

When the brain responds to sensory, or outside, stimuli, it has at its disposal the voluntary nervous system, which controls the voluntary muscles. Accompanying every voluntary muscle action is some activity of the autonomic nervous system for the purpose of preparing the tissues such as muscle and nerve to support the muscle activity. This autonomic activity is organized into patterns by the groups of nerve cells in the hypothalamus. A situation that is recognized by the brain to be one of importance to the welfare of the person is likely to be accompanied by a strong reaction in the organs of the body. The recognition of the situation and the sensations arising in the body as a result of the reaction carried out by the autonomic nervous system comprise what we call *emotion*. If appropriate action is taken by the voluntary muscles to meet or to escape from the threatening situation, the body functions as a unit, mobilized energy is effectively expended, and the body can return to its resting state.

Situations producing reactions of fear or anger produce the strongest internal bodily reaction. In a world motivated by self-interest there are so many real and imagined threats to man's welfare—so much loss, disappointment, uncertainty, and insecurity—that fear and anger or their protracted counterparts, anxiety and resentment, are extremely common feeling states. When, as so often happens, appropriate voluntary muscle action cannot be taken, either because the proper judgment prevents or because the mind cannot decide what to do, the autonomic activity continues. These mental impacts on the body can be just as real and damaging as physical impacts.

Mental and emotional stress can produce constriction of the blood vessels, causing high blood pressure; constriction of the bronchi, causing asthma; swelling of the membranes of the nose, producing obstruction to breathing and headache; swelling and ulceration of the membranes of the gastro-intestinal tract, causing discomfort in the abdomen; motor disturbances of the intestines, leading to either diarrhœa or constipation; spasm of the bladder, causing frequency of urination; irregularity and consciousness of the heartbeat; increased respiration, producing tight sensation in the chest and numbness of hands and feet; imbalance of control of the smaller blood vessels, causing skin blanching, flushing, sweating, and sense of dizziness; and other disturbances of function too numerous to mention here. If these changes in function persist, structural changes are likely to result.

An honest concern for the welfare of others and a sense of being the recipient of the solicitude of others produces a pleasant emotion called love, or happiness. This feeling state is conducive to the most efficient working together of the organs. Because there is no threat to personal welfare, the structures and activities of the human being can function as they seem to have been intended to function—in harmony for mutual benefit.

CLIFFORD C. TAYLOR,

Agricultural Attache, American Embassy, New Delhi

THE wide attention received by an article in the *Agriculture Supplement* of February 2 on the use of windmills for lifting irrigation water seems to warrant a brief postscript to answer questions which cannot be answered individually.

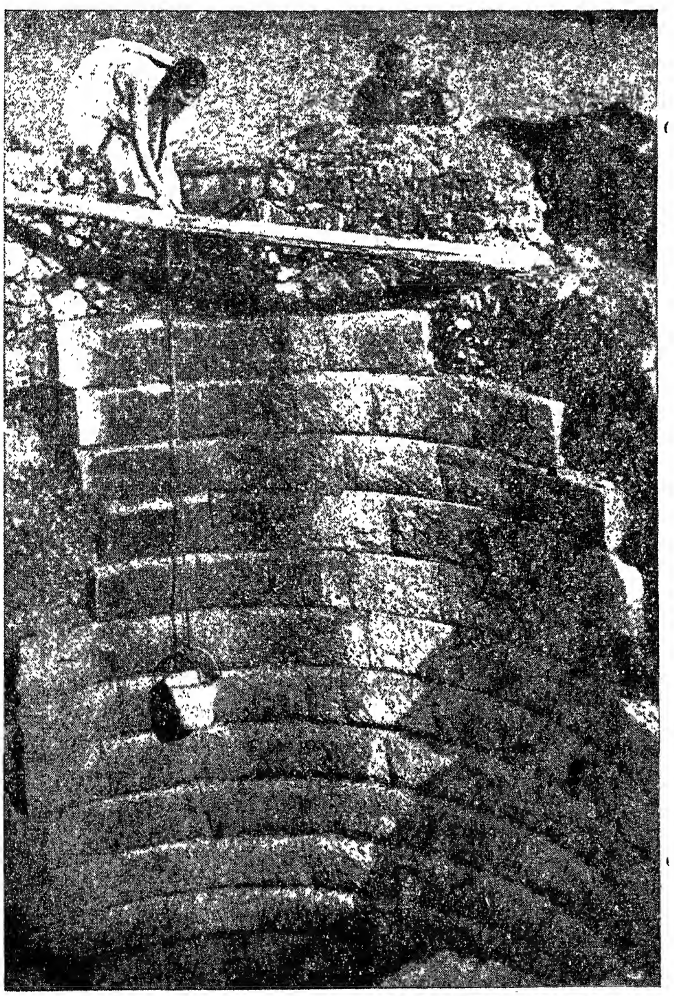
Wind velocity at almost any official weather reporting station in India can be obtained from the monthly publications of the Indian Meteorological Department. They are published by the Meteorological Office, Poona 5. Observations taken twice a day are generally available. For some stations observations are available for every hour. Provincial and State governments either have these publications on file or they can get them.

The amount of wind power available in each month at six stations in Mysore State was published about three years ago in *The Mysore Agricultural Journal*, Vol. XXIV, No. 4. Mr. A. Anantapadmanabha Rau, Statistician, Mysore Department of Agriculture, reported winds of 5 to 10 miles per hour on 168 days at Bangalore and 231 days at Jogimatti in northern Mysore. At the latter place there were also 110 days with wind averaging over 10 miles per hour. These wind velocities represented the average throughout the day and night. The variation in average wind velocity hour by hour was reported as follows:

Hour	*Wind Velocity Miles Per Hour* A.M.	P.M.
1	5.5	7.1
2	5.3	7.1
3	5.1	7.1
4	5.0	6.8
5	5.6	6.3
6	4.6	5.7
7	4.8	5.2
8	5.6	5.2
9	6.6	5.5
10	6.6	5.7
11	6.9	5.7
12	7.2 (noon)	5.6 (midnight)

Rau's study, covering a six-year period at Bangalore, showed the following variations in average wind velocity at mid-day throughout the year. It also showed the number of hours of useful wind per day.

	Average Wind Velocity at 1 P.M.	*Hours Per Day Wind Over 4 Miles Per Hour*	
	Miles Per Hour	*4.1 to 8*	*Over 8*
Jan.	5.9	24	—
Feb.	5.9	20	—
Mar.	6.0	18	—
Apr.	5.1	19	—
May	6.1	24	—
June	10.6	11	13
July	11.2	12	12
Aug.	9.8	15	9
Sept.	7.0	24	—
Oct.	5.6	10	—
Nov.	5.8	15	—
Dec.	6.6	24	—
Average	7.1	18	3



A windmill would obviate this laborious task.

The height of the anemometer which measures wind velocity is important. At a height 20 feet above ground-level the velocity of the wind at Poona is nearly 50 per cent stronger, and at a height of 40 feet it is over 60 per cent stronger, than at the 4-foot level.

Using a 12-foot windmill on a tower 30 or 40 feet high, a six-mile wind at that height will develop only about 0.05 horsepower. This power will deliver about 10,000 gallons an hour, divided by the number of feet the water is lifted. If the well is very deep the flow of water would be

small. A more expensive 18-foot windmill would develop over twice as much power and deliver over twice as much water from the same depth.

The size of the pump cylinder down in the well must be small enough and the stroke must be short enough to pump no more water at each stroke than the wind power developed by the windmill will lift. Otherwise the pump will stop.

Most windmills have an adjustment for changing the length of the plunger stroke in the cylinder. Having installed a cylinder of certain size, the length of the stroke can be shortened in order to keep the pump working when the wind power is low. This is equivalent to changing gears in a motor car in order to keep moving when the motor gets weak. The windmill continues to make 20 to 30 strokes a minute but each stroke delivers less water than before the stroke was shortened.

Bulletins of the United States Department of Agriculture are not available for individual distribution in India. However, they are available for reference purposes through provincial Ministries of Agriculture. In any event, detailed information about windmills can be obtained to best advantage from manufacturers.

American manufacturers of windmills generally prefer to sell through locally established agents. For the information of possible importers in India the following names and addresses of some of the American manufacturers are given. In naming these firms, and not others, no discrimination is intended. Intending importers must, of course, familiarize themselves with the regulations issued by the Chief Controller of Imports, Government of India, and follow the usual commercial procedures of verifying to their own satisfaction, through Indian banking channels, the reliability of foreign firms. These firms, or others whose names can be obtained from trade directories at any American Consulate General, should be addressed for further information as to prices, specifications and general information concerning windmills.

AMERICAN WINDMILL MANUFACTURERS

U. S. Challenge Company, 245 River Street, Batavia, Illinois.
Aermotor Company, 2500 W. Roosevelt Road, Chicago, Illinois.
Fairbanks, Morse & Company, 606 S. Michigan Av., Chicago, Illinois.
Struthers-Wells Corporation, Warren, Pennsylvania.
Baker Manufacturing Company, Evansville, Wisconsin.
U. S. Engine & Pump Co., 50 Water St., Batavia, Illinois.
Elgin Windmill Co., Mountain & State St., Elgin, Illinois.
Woodsmanse Mfg. Co., Freeport, Illinois.
Flint & Walling Mfg. Co., Inc., Henry T. Park Bldg., Kendallville, Illinois.
Dempster Mill Mfg. Co., Beatrice, Nebraska.
Fairbury Windmill Co., Fairbury, Nebraska.

—USIS.

SPEAKING OF DESERTS

THE largest sandy desert in Asia is the Arabian desert with its 1,000,000 square miles. Another important Asiatic desert is that of Gobi, in inner Mongolia, north of China. It has about 300,000 square miles.

But I am sure you know that the Sahara in Africa is the largest of all deserts. I was surprised when I learned only recently that the Sahara is larger than the United States of America.

Did you know that it has mountains a mile and a half high? Then there are other parts of it that are one hundred feet below sea level, and there are vast stretches without any mountains.

And is the Sahara hot? It surely is in daytime when in the afternoons the sand is sometimes heated to 150 degrees Fahrenheit. Oddly enough, this heat disappears so fast at night that the sands often cool to freezing point.

◇ ◇ ◇

INTESTINAL AILMENTS

JOHN B. D'ALBORA

EPIDEMICS of food poisoning occur because of carelessness either in handling, cooking or storing food. Every precaution is needed to avoid food infected by exposure to flies, roaches or rats and food cooked or handled by someone coming down with an acute respiratory infection or suffering from an infection of the hands. A severe epidemic of food poisoning can occur in your home, school and even in hospitals and army messes.

Our intestines serve an important function which should be performed at a definite time each day, preferably after breakfast, under thoroughly relaxed conditions. Cathartics and even mild laxatives are seldom necessary if a person eats sensibly, drinks sufficient water and establishes a correct bowel habit. When the intestines function as they should we pay little attention to them, but actually they are quite sensitive and easily affected.

Diarrhœa or "running bowels," the most common symptom of intestinal ailments, often presents a difficult problem to the physician, both as to diagnosis and treatment. The reason for this is that there are so many predisposing factors that render the intestinal membrane susceptible to injury, with the resulting symptom complex of diarrhœa.

We shall begin with the so-called functional diarrhœas, those in which the cause is not due to infection or to organic disease of the intestine.

Many of the functional diarrhœas are neurogenic or nervous in origin. If we are highly-strung and nervous persons, they occur under an increased emotional strain, when we are overtired from work or pleasure, or fatigued mentally from

worry. Under such conditions, the secretion of the proper kind and amount of stomach and intestinal digestive juices is interfered with, and the food is not properly digested and prepared for absorption. This improperly digested food irritates the membrane lining the intestine, causes over-activity of the bowel contractions and an excessive flow of fluid in the intestine. The result is diarrhœa. To cure this type of diarrhœa, the physician must treat the patient and not the symptom. He must determine the cause of the emotional upset, the reason for the worry and anxiety. He must remove these predisposing and exciting factors to affect a cure, and the patient must make the necessary adjustment in occupation, mode of living and personal habits if this is to be accomplished.

Another sizable group of unexplained diarrhœas is probably allergic in nature. Many people are sensitized to certain foods which cause abdominal distress, often cramp-like pain and finally diarrhœa. Many persons in this group have other manifestations of allergy, such as urticaria or hives, hay fever and sometimes asthma. In this type of diarrhœa, the cure lies in tracking down the responsible article of food by means of so-called elimination diets, and sometimes by utilizing skin tests, or both. This requires the perseverance and full cooperation of the patient for satisfactory results. Once the offending food or foods have been determined, the patient must abstain from eating them or he will suffer the consequences.

Fortunately, there have been developed recently several new antihistaminic drugs that are proving highly efficacious in the management of allergic conditions in many instances. In the not too distant future, it may be possible for persons suffering from intestinal allergy to eat and enjoy food they cannot indulge in now, by the simple expedient of taking an antihistaminic tablet just before or after a meal.

Another cause of functional diarrhœa is the use of too much roughage in the diet. The daily consumption of generous portions of the coarse, leafy vegetables, either cooked or raw, or the eating of unripe fruit, may lead to "running bowels." The drinking of large quantities of ice cold liquid when the body is overheated and perspiration is profuse is often followed by diarrhœa.

The cathartic habit is a frequent cause of diarrhœa. The daily use of many of the well advertised cathartic remedies is distinctly harmful to the normal function of the intestine and may, in time, lead to serious organic disease.

There is also the diarrhœa sometimes caused by indulgence in alcoholic beverages. Many persons develop "running bowels" even when they use alcohol in moderation.

Among the infectious diseases of the intestine, food poisoning, often mislabeled "ptomaine poisoning," is responsible for many cases of diarrhœa, vomiting, fever, cramp-like pain in the abdomen and often prostration. The eating of partially decomposed, fermented or putrefied foods accounts for many epidemics. The better known agents which may give rise to infection from spoiled foods are the so-called Salmonella group of organisms, particularly the paratyphoid bacillus.

In recent years, there have been some epidemics of so-called intestinal grippe or intestinal flu. They are probably caused by a virus infection and are characterized by mild fever, headache, and general body aches, abdominal pain, diarrhœa and some prostration. Often one infected member of a family spreads the disease to the whole household. While this disease is distressing, almost everyone recovers promptly, although they complain of weakness for some time.

Many veterans of World War II acquired dysentery. Some of them still have the disease in a mild chronic form. It causes them little discomfort and seldom incapacitates them in any way. However, they may spread the infection to others, especially if they follow the occupation of food handler in civilian life. For their own safety and the protection of others, anyone who has contracted bacillary or amœbic dysentery, should have periodic health examinations including proctoscopy and stool examinations and cultures.

Another distressing intestinal ailment which causes ulcerations principally in the colon or large bowel, is known as chronic nonspecific ulcerative colitis. It is a chronic, depleting and debilitating disease occurring usually in young people. These patients have many rectal discharges of mucus, pus, and blood, at times fever, frequently cramp-like pain in the abdomen and rectal straining. They lose weight rapidly, become dehydrated from loss of body fluids and develop severe anæmia. The cause of this disease is still unknown. We believe many factors are responsible in producing chronic nonspecific ulcerative colitis, such as a neurogenic or nervous factor, food allergy and infection.

Finally, we come to the middle-aged individual who notices some blood in the stool. There may be no change in bowel habit. Too often the patient and sometimes the physician by a superficial and casual examination, dismisses the slight bleeding as coming from the ever present hæmorrhoids. Actually, the bleeding may be from a cancer of the colon or rectum, which has begun to ulcerate and break down. While cancer is found more frequently in the middle and old age groups, it also occurs in young people. The diagnosis can be made only by proctoscopic examination and careful X-ray studies of the gastro-intestinal tract. Cancer is curable by surgery, if discovered early. It becomes inoperable and incurable when the diagnosis is made too late. Delay is therefore fatal. At the first sign of rectal bleeding consult your doctor.

To neglect either prolonged constipation or diarrhœa is serious. Avoid the use of patent medicines in treating them. Your doctor has the knowledge and resources at hand to make a careful rectal, proctoscopic and X-ray examination or he will refer you to a physician in that particular field.

—*Hygeia.*

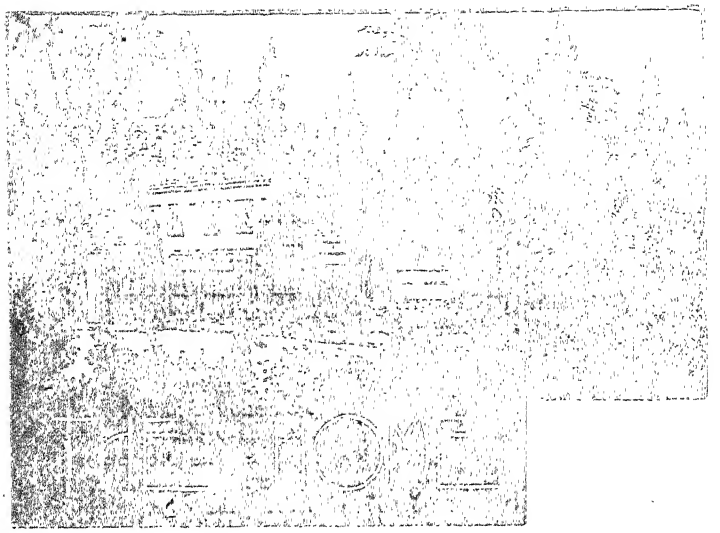
BOOK REVIEW

FOOD PROBLEMS IN INDIA IN GENERAL AND IN KOLHAPUR STATE IN PARTICULAR, by Dr. P. C. Patil, L. Ag., D.Sc., M.Sc., I.A.S. (Retired) Published by Rao Bahadur Dr. P. C. Patil, Tarabai Park, Kolhapur, 124 pages. (Rs. 4-0-0)

ALL who are interested in India's present and future food requirements will find this little volume chockful of information from beginning to end. A detailed Table of Contents and numerous sub-headings throughout the work enhance the usefulness of the book for reference purposes.

The author has drawn abundantly on statistics compiled by all kinds of government agencies concerned with anything that has to do with food production and consumption, and has based his opinions and assertions on such statistics. His main purpose is to assess food-grain requirements and to find the shortages, but incidentally the reasons for such shortages, the possibility of improving the present situation and the prospects for the future are also treated.

Among the items included in the discussion are the increasing population, shortage of land, prospects of increasing tillable areas, comparisons between past and present situations, relative merits of vegetarian and non-vegetarian diets, human calorie requirements, food imports, balanced diets, and consumption of food grains by various economic groups. He concludes that at least 65 per cent of the population are undernourished, many living on the verge of starvation. After dealing with these and a host of other similar matters the author expresses his opinion that the food situation can be improved in India and Pakistan, but that birth control is a requirement because at the best that can be even contemplated or conceived, production of food cannot keep pace with the present rate of population increase. The book should be welcomed by government officials, economists, and others who are interested in India's social and economic welfare.



THOMAS EDISON AND THE GOOSE EGGS

ALEXANDER FRANZ

"GRANDPA, tell us a story about when you were a little boy," begged Herbie.

"All right, children, I'll relate something about a certain celebrated man who died in 1931, but, if he were living now he would be one hundred years old. Who do you think he is?"

"I think he must have been Thomas Edison," said Evelyn.

"That is correct," said Grandpa. "I was born in Akron, Ohio, the Rubber City, but it was not much of a rubber town in those days. My mother told me that in 1886, when I was a small boy, Thomas Alva Edison came to Akron for his second wife. She was one of the Miller girls and her name was Mina. I never learned how the couple became acquainted, but it was explained to us that because Akron was Mrs. Edison's home city, Mr. Edison saw to it that the first electric street lights were placed there.

"Akron has many railroads. When a passenger train arrived there at night, the conductor would shout, 'Akron, the electric light city!' The passengers would look out of the windows to see the wonderful new lights. The street lights of those days were not of glass bulbs, as now, but the light was produced by the contact of two sticks of carbon above two other sticks of carbon. During the daytime the burned-out sticks were replaced with new ones. Shall I tell you a little more about Mr. Edison?"

"Oh, yes, do!" exclaimed Loraine.

"Mr. Edison was born in Milan, Ohio. When he was seven years old, his people moved to Port Huron, Michigan. At the age of twelve he became a newsboy on the railroad that extended to Detroit, and before long he was setting up and printing a little news sheet on the train, which he called the *Grand Trunk Herald*.

"He also set up a small chemical laboratory in one end of the baggage car, but one day the chemicals blew up and set the car on fire. But the fire was soon put out. On reaching the next station, the angry conductor threw out the laboratory and the youthful chemist after it, and gave him a vigorous box on the ear which thereafter left him hard of hearing.

"Tom saved the life of a station agent's baby and thus won a real friend. The agent taught him telegraph operating, and at the age of fifteen years Thomas Edison was in charge of an office.

"Here is a tale that Mr. Edison told on himself. When he was a small boy and for the first time saw a goose sitting on eggs and found out why she did it, he disappeared for a time. When he was found many hours later, he was sitting carefully on all the eggs he could gather. If a goose could hatch eggs, why could not he?

"The spirit and method of the boy became the spirit and method of the boy grown into manhood. Edison helped to fill the world with light and heat and power. By application and perseverance he obtained many secrets from nature, and did more than any other man to transform conditions of our existence, making life much more easy and pleasant than it was a hundred years ago."

THE KIWI

HARRY BAERG

IN THE far-off country of New Zealand there lives an odd bird about the size of a large chicken, and it lays eggs five times as big as hens' eggs. Four kiwis' eggs would weigh almost as much as the mother kiwi does. There used to be many of these birds but they have been hunted so much that now there are hardly any left. This bird gets its name from the way it calls. It says "Kwee, kwee, kwee" about twenty times in succession and then "Kurr, kurr."

The kiwi has a long bill with which it probes into soft earth and sniffling all the while, carefully pulls up long worms and insects. It cannot see very well and hunts mostly at night, but having its nostrils near the tip end of the bill, it finds its food largely by smelling. At the large end of the bill the kiwi has many long feelers like a cat's whiskers. These help it to go through dense underbrush without hurting its eyes.

These birds do not have wings and they are unable to fly. They don't even have a tail. Their legs are heavy and strong and when they are chased, the kiwis can run very fast. If they have to fight they do it with their feet, kicking out and scratching with powerful strokes.

When it comes to nesting the mother bird lays two large eggs in a nest in a hole in the ground, then leaves her mate to hatch them out. Most young birds do not look much like their parents because they have down and no feathers, but young kiwis look like their parents. They are covered with a coarse down or fur like that of the older birds.

There are at least three different kinds of kiwis in New Zealand, but there are very few left of any of them. The government of that country is anxious to keep alive every one of these unusual birds.

RECIPES

SPICES AND CONDIMENTS

IN INDIA spices and condiments play a large part in the food accessories of the people, and you may wonder why chillies and vinegar and other high seasonings are not used in the recipe column of THE ORIENTAL WATCHMAN AND HERALD OF HEALTH. Some spices are very stimulating and highly irritating to the lining of the stomach and to the intestines and, in turn, to the kidneys and other eliminating organs of the body.

The most irritating spices are cayenne pepper, chillie powder, red and green hot peppers, horse radish, mustard, and should not be indulged in daily. A little less irritating are cloves and ginger. Slightly irritating are allspice, anise, cassia, cinnamon, cummin seed, mace, and nutmeg. Used sparingly, these are not so harmful.

The non-irritating food seasonings are: bay leaf, caraway seed, celery salt, and dried celery leaves, as well as celery seed, chives, dill seed, fennel, mixed herbs, marjoram, mint, saffron, sage, parsley, peppermint, thyme, turmeric, wintergreen, onion, and garlic, and several other green leaves found in India, giving bitter, sour, and savoury tastes. The recipes found in this health journal can always be relied upon as giving the most wholesome combinations of seasoning. Salt, of course, is the most essential of all seasonings, but too much salt is not at all good for the body in many instances. India has a rich supply of many sweet herbs and these too, are good seasonings for food.

TOMATO SAUCE

Two cloves garlic, crushed; 1 tablespoonful chopped onion; 2 tablespoonfuls butter or oil; ½ teaspoonful sage or mixed herbs; 3 tablespoonfuls browned flour; 2 cups tomato juice; 1 teaspoonful brown sugar; salt to taste.

Simmer the chopped onion and garlic in the butter over the fire with the savoury for a few minutes. Add the browned flour and stir till smooth. Slowly add the tomato juice, stirring well as you add it: let boil. Season with salt and sugar and serve.

Browned flour is made by heating the flour in a frying-pan, stirring to keep it from burning until it is a light brown colour.

BRINJAL PATTIES

One large brinjal; 2 tablespoonfuls flour; 4 tablespoonfuls milk; 4 tablespoonfuls oil or ghee; salt to taste.

Wash brinjal, but do not peel. Slice it in thin slices and put it in salted water for half an hour or more. Make a batter of the flour and milk to which add a little egg powder if desired. Drain brinjal and dip in batter. Fry a golden brown on both sides. Serve on platter. Serves two.

RICH SPAGHETTI DISH

Eight ounces spaghetti; 1 tin mushroom soup; 1 chopped onion; 2 cups tomato juice; 4 hard boiled eggs, diced; buttered bread or cracker crumbs.

Boil spaghetti in salted water (generous amount) and drain when soft. Fry onion in small amount of oil or ghee. Combine all the ingredients, put in casserole and cover with bread crumbs. Bake in moderate oven 20 to 30 minutes. Serves six.

KOTEMEER CHUTNEY

One bunch kotemeer; ¼ coconut; 3 cloves garlic; 1 small piece green ginger; 1 onion; 1½ tablespoonfuls lime juice; salt to taste.

Grind all ingredients together and mix well. The chutney is ready to serve.

VEGETABLE LOAF

One cup string beans, cut fine; ½ cup carrots, cut fine; ½ cup celery stalks, cut fine; ½ cup cooked rice; 3 tablespoonfuls butter or ghee; 3 tablespoonfuls your favourite chopped nuts; 6 tablespoonfuls white sauce; ¼ cup buttered bread crumbs or cracker crumbs; 1 egg, beaten.

Cook beans in a small amount of boiling water five minutes, add the chopped carrots and celery, and boil twenty minutes longer, or until tender. There should be only a few drops of water left. Salt to taste. Now add butter, egg, nuts, white sauce, and half the crumbs. Mix well. Place in a buttered pan and cover with remaining crumbs. Bake in oven until slightly brown—about fifteen or twenty minutes. Serve with tomato sauce. Serves four to six.

WHITE SAUCE

Two level tablespoonfuls butter; 2 rounded tablespoonfuls flour; 1¼ cups milk; salt to taste.

Melt butter in saucepan, add flour, and stir until blended. Add milk and cook until thick, stirring constantly. Salt to taste.

FAVOURITE KHICHIRI

Two cups rice; 1 cup red dal; 2/3 cup ghee or ½ pound butter; 2 tablespoonfuls chopped onion; ½ teaspoonful finely chopped garlic; 10 cloves; 10 cardamoms; 1 small piece green ginger, grated; 2 small sticks cinnamon; ½ teaspoonful allspice; 1 level teaspoonful ground haldi; salt to taste.

Put butter, onion, and garlic in a large stew pan, cook but do not let it brown. Add the spices and stir and fry a few minutes only. Now add the well washed dal and rice. Stir and fry a few minutes. Cover this with boiling water about an inch above the mixture. Put a tight cover on the kettle and cook over slow fire until all the moisture is absorbed. Serves four to six.

SWEET MANGO CHUTNEY

Six green mangoes; ½ cup lime

juice; 5 tablespoonfuls sugar; 2 tablespoonfuls sultanas; 1 small piece green ginger, sliced fine; 1 teaspoonful salt.

Peel mangoes and cut in slices, removing stones. Boil lemon juice and sugar together, add the mangoes and ginger. Cook until mixture is thick. Cool and serve.

POTATO CHUTNEY

Four medium potatoes; ½ cup thick curds; ½ teaspoonful cummin seed.

Boil potatoes and mash; add salt to taste. When cool, pour in the curd and add the cummin seed, and also a very little ground haldi if desired. Serve.

THE DOCTOR SAYS

THIS question and answer service, free only to subscribers, is intended for general information. No attempt will be made to treat disease or to take the place of a regular physician. In special cases, where a personal reply is desired or necessary, it will be given if a stamped addressed envelope accompanies the question. We reserve the right to publish the answers to any questions sent in, if we deem them beneficial to our readers, though no names will be published. Address the Associate Editor (Doctor Says) "Health," Post Box 35, Poona 1, and make questions short and to the point.

EXCESSIVE PERSPIRATION: Ques.—"I perspire profusely upon the slightest exertion or when upset emotionally, sometimes for no reason whatever. After perspiring like this I feel very exhausted. Kindly advise me of a cure."

Ans.—Excessive perspiration may be due to a number of causes. Certain systemic diseases such as diabetes, tuberculosis or toxic goitre may produce it or it may be due to excessive nervous irritability. In any case the first thing is to have a careful physical examination by a competent physician. If no underlying systemic disease is found, general hygienic measures (good food, plenty of sleep, and exercise) and local treatment is indicated. Often it is not possible to overcome the affliction entirely, but your doctor after examining you, can give you a lotion to apply. The exhausted feeling which accompanies prolonged sweating can be relieved by taking half a teaspoonful of ordinary table salt with a glass of water one to four times per day, depending on the amount of sweating.

CHRONIC DIARRHOEA: Ques.—"For the past four years I have been a sufferer from chronic diarrhoea, that is, ever since I had an attack of amoebic dysentery. I have had many stool tests and no amoeba is present. I was examined by one doctor and he said the diarrhoea was due to a lack of hydrochloric acid in my system. Upon taking hydrochloric acid my condition improved but when I do not take it the diarrhoea begins again. How long should I continue taking hydrochloric acid?

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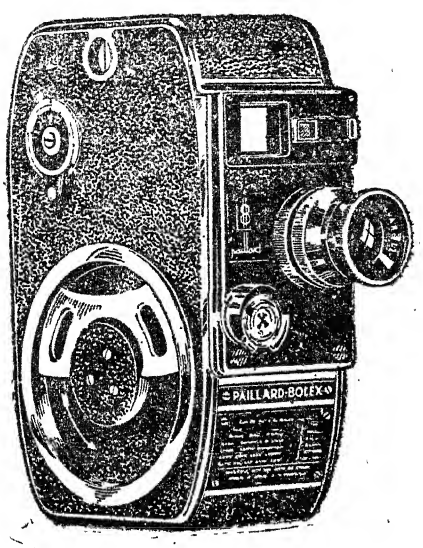

We have pleasure in announcing that, with effect from the 1st January, 1949, we have been appointed Sole Agents for the Indian Union of the famous Paillard sub-standard Ciné Cameras and Projectors. Stocks will shortly be available from all A.P.L. dealers. Trade enquiries may be addressed to any of the offices listed below.

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THE ORIENTAL WATCHMAN AND HERALD OF
HEALTH
FOR HEALTH, HOME AND HAPPINESS

Vol. 26, No. 4 POONA April 1949

Published Monthly by
THE ORIENTAL WATCHMAN
PUBLISHING HOUSE
Post Box 35, Poona 1, India

E. M. Meleen, Editor
J. B. Oliver, M.D., Associate Editor

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Published and printed by L. C. Shepard, at and for the Oriental Watchman Publishing House, Salisbury Park, Poona 1. 14,000—3996-49

Is there any natural source from which one can obtain hydrochloric acid, or is there any other way of treating my complaint?"

Ans.—You should continue taking hydrochloric acid probably for the rest of your life. It is not in any way harmful as hydrochloric acid is the acid produced by the normal stomach as part of the normal digestive juices. Apparently your stomach is not producing acid as it should be, hence the need for your taking it. I should advise that you visit a competent physician about y six months for a check over.

AMELLIN: Ques.—"In your July issue of HEALTH there is an article entitled 'Amellin—New Hope for Diabetics.' I am interested in this and would like to have full particulars from you."

Ans.—This new treatment for diabetes is still in the experimental stage. Over a hundred diabetic patients have been treated with encouraging results. Dr. Nath states that as yet this material is manufactured only on laboratory scale. It is not being produced commercially although there are some patent medicines being advertised which have a similar name. In a recent communication, Dr. Nath authorized this column to publish his name and address for the benefit of any readers who might wish to communicate with him directly. Such communications should be addressed to Dr. M. C. Nath, Department of Biochemistry, Nagpur University, Nagpur, C. P.

RAW EGGS: Ques.—"Is it healthful to eat raw eggs? I have learned something of the constituency of an egg and understand that it is more indigestible when taken raw. Is this true?"

Ans.—We consider it safer from the bacteriological standpoint to take eggs cooked instead of raw. There is also a substance in raw egg white called avidin or avidalbumin, which combines with biotin (formerly called vitamin H) and renders it inactive. This substance is neutralized by cooking the

UMBILICAL HERNIA: Ques.—"I am suffering from umbilical hernia and have had quite acute pains as a result. Kindly advise a cure and necessary precautions to be taken."

Ans.—Hernias are not curable with medicine. They may be controlled by wearing a properly fitted truss. Some years ago injections enjoyed a vogue for a time, but in many cases these proved to be a failure. The proper treatment for hernia remains—surgery.

EYESTRAIN: Ques.—"My brother who is seventeen years of age is a student, and he often complains that when he sits to read he cannot do so for more than a couple of hours because of a sense of giddiness which overcomes him. This giddiness sometimes develops into an intense headache if he continues his study. Please suggest a suitable tonic for him or some other treatment."

Ans.—Headache brought on by reading is often due to eyestrain because of refractive errors or due to improper lighting or sitting position. The chair and study table should be simple and comfortable. The light should come from above and behind so as not to throw a shadow on the book. You should have your brother's eyes examined by a competent optometrist to determine whether he needs glasses.

ABORTION: Ques.—"My wife has had two abortions recently. She received injections to prevent abortion but to no avail, and after the second abortion the doctor advised curating. What precaution should be taken if she becomes pregnant again?"

Ans.—It is impossible to say from your brief description as to what is the cause of your wife's abortions. The injections and medication your wife received are often very useful in treating habitual abortion, but abortion is caused by may different conditions—constitutional disease, injury, overwork, worry, or acute or chronic diseases. You should have your wife examined by a skilled physician who will also do a blood test.

INSOMNIA: Ques.—"I am only a young man and for the past year I have been troubled with partial sleeplessness. I sleep only five and a half hours at the most every night and that sleep is always of a disturbed nature. This lack of sleep is making my nerves

weak. Kindly suggest some sleeping pills which will help me to sleep without injuring my health in some other way."

Ans.—Insomnia is a problem which troubles a great many people. Usually if one leads a fairly regular existence, spends an hour in bodily exercise every day and refrains from eating heavy meals at night or very close to one's bedtime, one can usually sleep. A warm drink or a warm bath just before bedtime often aids in relaxation. If, in spite of these simple things, one still does not sleep, one should be examined thoroughly by a physician. The taking of the various sleeping tablets is dangerous except under a physician's direction. Of course there are some people who do not seem to need as much sleep as the average. But most of us need eight hours every twenty-four.

MULTIPLE BIRTHS; DARK COMPLEXION: Ques—"(1) How is the phenomena of three and four child births at the same time explained? (2) Are substances like 'Whitex' 'Blossofine' or 'Mercolized Wax' capable of converting a dark complexion into a fair one? If not is there any other substance known medically which can accomplish this?"

Ans.—(1) In the human race single births are the common thing, while multiple births are out of the ordinary. Twins occur about once in 85 births, triplets once in 7,600 births, quadruplets once in 670,000 births, and quintruplets once in 41,000,000. There have been authentic cases of six and seven babies being delivered at one confinement. Twins are of two varieties: fraternal twins which originate from the simultaneous fertilization of two eggs, and identical twins which are the result of two individuals being formed from a single egg. Production of twins tends to be more common in certain families but the exact cause of the phenomenon is unknown. (2) The particular preparations you mention are not familiar to me. There are preparations on the market which claim to change dark skin to light. Most of them contain mercuric chloride which is a dangerous poison. Also, most of them are of only temporary benefit. Hence I should counsel against using them. The pigment in the skin is known as melanin and is manufactured by certain cells which are situated rather deeply in the skin. These cells are stimulated to produce more pigment by the action of the ultra-violet rays in sunshine. Hence the avoidance of exposure to the sun is an important factor in avoiding excess pigmentation. There are also various creams and lotions on the market which, when applied to the skin, will protect against the ultra-violet rays of sunlight. Your druggist can easily suggest a suitable preparation. But do not sacrifice your health to the hope of having a slightly fairer skin, for the ultra-violet light in the sunshine is essential to normal health. One requires a certain amount of it in order to maintain bone and blood and muscle in proper functioning order.

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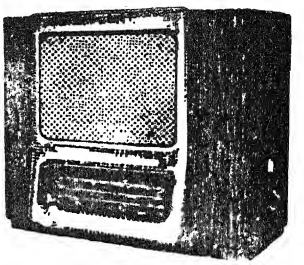

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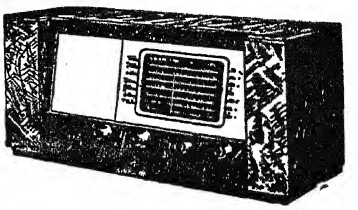

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ORIENTAL WATCHMAN
APRIL SUPPLEMENT 1949

THE AIR AGE IS HERE!

EVERETT E. DUNCAN

ANCIENT seers foretold it, the twentieth century produced it —the Air Age is here!

Recently the manager of the National Airport at Washington, D. C., U. S .A., received a flood of protests because parking mètres had been installed around the traffic circle in front of the main building, where people drive up to put friends on planes or to make brief visits.

"I had to do it," explained the manager. "Why, people were coming over here and parking their cars for three or four days while they went to Europe!"

This is an indication of how commonplace air travel has become, of how completely the Air Age has arrived.

Never since time began has the world witnessed such a mania for speed. The major nations are deadlocked in a gigantic race for vehicles that will constantly outdo each other on land, on sea, and especially in the air.

A plane now exists that is designed to carry a pilot to the breathtaking altitude of 80,000 feet, or fifteen miles up, well beyond the highest point ever reached in human flight either by plane or by balloon.

That sky climber is a rocket-propelled experimental Air Force plane, built to fly 1,700 miles an hour, more than twice the velocity of sound.

Scientists foresee the day when a traveller, riding in a plane powered by the fast ram-jet engine, may leave New York at noon, Eastern standard time, and reach San Francisco before noon, at 11 a. m. Pacific time!

Seven years ago the fastest fighter planes, still in the experimental stage, did not fly more than 400 miles an hour. Now the jet propelled fighters zip through the sky at 600 miles an hour or better, and unpiloted jet-driven craft have actually flown far beyond the speed of sound at 1,500 miles an hour.

Seven years ago it took the air traveller eighteen hours or more to fly from coast to coast of America on a commercial plane having two engines and a cruising speed of 180 miles per hour. Today that same traveller can cross the continent in ten hours in the improved four-engined transport which cruises at an average speed of three hundred miles per hour.

The U. S. Navy's new experimental jet plane, the Skystreak, can hurtle through space as fast as the

This plane of the future conceived by a famous designer is expected to approach the speed of sound.

earth turns at the latitude of London, England, or Winnipeg, Canada. Flying westward at this latitude, the Skystreak might fly around the world in a day, keeping up with the sun if it could carry enough fuel.

Never before has man had to cope with and overcome obstacles such as he meets in the air at such incredible speeds. When the Skystreak whizzed through space at 650 miles an hour, air friction heated the cockpit to a temperature of 170 degrees Fahrenheit. A refrigerating system had to be installed, which reduced the temperature to 105 degrees so that the pilot could endure it.

High-speed ball and roller bearings which cushion the newest jet engines make jet power so smooth that a vibrator must be set up in the pilot's cabin so that the scores of instruments will function properly.

Another handicap, invisible but menacing, is the pounding, smashing, turbulent force that engulfs an aircraft when it nears the speed of sound. Air molecules, pushed ahead of an aeroplane wing like the bow waves of a ship, cannot get out of the way fast enough when the speed of sound is approached. To overcome this obstacle, wings of fast fighter planes are almost as thin and sharp as knife blades, enabling the plane to slice through the air with a minimum of disturbance.

Strangely enough, once a plane is flying well beyond the speed of sound, the turbulence of the air flow disappears and the buffeting forces cease.

For supersonic speeds of the future, petrol-driven planes using propellers are obsolete because the thin, knife-sharp wings and small fuselages have little room for fuel. Jet planes of the future may burn elements such as boron or aluminium in powdered or liquid form, which will provide far higher energy than oil for the same volume. Planes may eventually use atomic power, which has 50,000,000 times more energy than petrol!

Soon the cry of test pilots may be for the "new frontiers" of other planets in which to experiment, since continents have been drawn together by hours instead of weeks. Peoples, customs, national problems, and inventions are becoming as familiar to the savage, slave, and peasant as they are to the civilized and educated.

In 1926 Rear Admiral Richard E. Byrd flew the first aeroplane over the North Pole and was awarded high honours. Today the United States Air Force men fly over the North Pole three times a week.

More than nine hundred aeroplanes, three times the number in use before the war, are now flown regularly by the scheduled airlines in the United States alone. Across the Atlantic there is an average of sixty flights each way per week. More than thirty crossings of the Pacific are made each week in contrast with two before the war.

Airlines cover the earth with a 500,000-mile network that reaches practically every nation. Already a Yale professor speaks of interplanetary travel being possible within our lifetime, and a course of rocket navigation is being taught at the University of California.

Never since the dawn of creation has so much emphasis been placed on travel and speed. Why is it that the past half century has produced a greater increase in speed and modes of travel than all preceding millenniums combined? Is it because man has become suddenly and naturally more brilliant during the past fifty years? Or is there a divine blueprint behind it all?

Surely God has thus ordained it. Certainly God foresees that unless the Gospel is hastened to every nation, kindred, tongue, and people, mankind will literally annihilate himself. It must be that this sudden surge of increasing speed and travel is in answer to the dramatic prolonging of time mentioned in Revelation 7:1-3. Four angels of destruction are poised ready to loose upon a guilty world the final, terrible plagues of judgment, when, suddenly, another angel is commissioned to fly swiftly to their side and commands them: "Hurt not the earth" until mankind is given another opportunity to accept salvation and receive the seal of the living God.

Only a few decades ago this model of a walking cycle was the latest in transportation facilities, easy and fast only on the down hill. We laugh at its crude design and cumbersome inadequacy; but for nearly six millenniums men were content with the cart, and were not acquainted with any sort of cycle. Yet the fathers, while lacking in invention, were not without knowledge of the future.

Could it be that God has allowed this increase of knowledge, which man is using to destroy the world, to be the very means of speedily warning all mankind of His soon coming in judgment?

Surely World War II has softened and humbled many nations and peoples; surely the rapidly constructed highways, airfields, and ports in earth's remotest lands have made it infinitely more accessible to the heralds of salvation. Surely out of the maelstrom of war many hearts have been taught to look to God and are being prepared for His coming. Many today are being plucked as brands from the burning as the world prepares for its final irrevocable plunge to destruction.

Daniel spoke of our day when he mentioned that in "the time of the end: many shall run to and fro, and knowledge shall be increased." Daniel 12:4. Zephaniah predicted that in the time of the end Christ's coming would be hastened greatly. (Zephaniah 1:14.) Paul foretold that God would cut short the time for the giving of the Gospel. (Romans 9:28.) And Christ's final message to John was: "Surely I come quickly." Revelation 22:20.

God has blessed this last generation with the Air Age that the Gospel might be quickly sent to every nation. He has allowed an increase of knowledge that continents might be easily informed of the end of all things. He is about to return as King of kings and Lord of lords. Soon sin will be banished for ever. Are you ready for that day? Are all these happenings and marvels a sign to you that *now* is the accepted time to get ready? Jesus said: "When these things begin to come to pass, then look up, and lift up your heads; for your redemption draweth nigh." Luke 21:28.

WHENCE CAME MAN?

R. D. VINE

LUKE'S record of Christ's ancestry ends with a sublime climax. Our Saviour's human parentage is carefully traced back through more than seventy generations to "Enos, which was the son of Seth, which was the son of Adam, which was *the son of God*." Luke 3: 38. Thus ends the genealogical record of every man regardless of his race or clime.

This verse indicates the point where the family records of all men meet, be they Negro or Nordic, Jew or Gentile. Adam was the father of all living, and was the "son of God" Himself. The Bible leaves no doubt that God "made man upright," having especially created him in the divine image. (Ecclesiastes 7:29; Genesis 1:27.)

When intelligent man first walked this earth, he had no animal ancestry to thank for his emergence. His physical, mental, and spiritual being was planned and formed as a special creation by God Himself. Man, Adam, was God's masterpiece—His crowning work—in that Edenic world which flourished a few thousand years ago.

We may with pride trace "blue blood" in our veins, and there are some whose satisfaction would know no limits could they but trace some royal personage among their distant forebears. But in whatever stratum of society we now may find ourselves, we know, on the authority of God's Word, that our genealogical trees all had an identical beginning. If we trace back far enough—and a mere six thousand years will suffice—we all may claim as our progenitor the noble Adam, "which was the son of God."

Thus does the Bible declare it. Thus do we believe it. And it is far more than all the massive might of scientific genius can do to prove it false.

But for the scientific world generally, this story is too simple. With feelings of revulsion they shun the Bible record of a special creation act, convinced that acceptance demands too great a stretch of faith. They prefer to believe that man is not so much God's masterpiece, as the marvellous product of evolutionary processes. Some may reluctantly concede that God—whoever He may be—began this process, but that thereafter all was but a mere outworking of natural laws with which God has had nothing to do.

And whatever God did, if He did anything at all, was millions of centuries ago—the longer the time, the better the evolutionists like it, for it tends to make God more remote. After all, as Professor William Howells assures us: "There is no necessity to be miserly with time." —*Mankind So Far*. Juggling time is a favourite occupation of the pseudo-scientists, and though these erudite jugglers often differ by billions of years in their estimates, this is, they think, no reason why the evolutionary fabrication should be questioned in any way.

Man had, they say, an extremely humble beginning. Without doubt, so the story goes, our earliest ancestor was akin to the Dinoflagellata —algae which are just visible to the naked eye, and such as abound today in stagnant waters. Thus our ancestry is traced to an elementary forebear, whose actual status scientists are not all agreed upon. These monocellular organisms have tails, and minute bodies which inflate and deflate, and are capable of very agile acrobatics. Thus it would almost seem that they are animals.

They do not, however, contain hæmoglobin like normal members of the animal kingdom, but chlorophyll like the plants—and like the plants they feed on minerals in water solution and on gases.

A very humble and insignificant ancestor for man indeed—a mere plant! A very animated and virile one admittedly, but nevertheless, a plant.

Don't ask the evolutionists where the Dinoflagellata came from. Some who are religiously inclined may broadmindedly suggest that they were the offspring of God. Others can do no better than conceal their ignorance from the uninitiated by speaking of "spontaneous generation." A few such awe-inspiring expressions, and all is well—or so they seem to think.

But destiny had great things in store for one branch of the Dinoflagellata. Fearing the stagnating influence of the stagnant waters in which they sojourned, some were evidently inspired with loftier, nobler aims. Struggling strenuously for billions of years—no need to be niggardly with time—the progressive ones eventually developed into sandworms.

Perhaps he is weeping because he is not given more attention as the "missing link" between animals and men!

It is thought that these Pre-Cambrian sandworms differed very little from the present species. Generally they adapted themselves well to their sandy environment, and without doubt, proudly regarded their status as infinitely superior to that of the lowly algae of the stagnant pools.

But, such is the insatiable nature of ambition, some—or at least one—of these worms sought higher, loftier heights than that of continual comradeship with his wormy brethren. He developed, or in some way found himself the possessor of a kind of restless instability which no longer enabled him to fit happily into his sandy environment. He yearned for change. And this "creative instability" as Professor Lecomte du Nouy has termed it, enabled him to develop into a more complex creature. It is quite possible that he "may have been our ancestor."—*Human Destiny*, p. 89.

The centuries rolled by—millions of them—and the progressive progeny of the worm achieved the status of fish. The future *Homo sapiens* could now be clearly anticipated, for the whole anatomical plans of men and fish are fundamentally the same. "Man is a modified fish," asserts Professor Howells in *Mankind So Far* Great significance is placed upon the similarities in form. Both man and fish have breathing and circulation systems which are essentially the same, likewise their digestive tracts, the rudimentary features of their bony structures, and the concentration of the senses and central nervous systems in the head. "To the fundamental fish, therefore, we owe a limitless debt," the professor declares.

Not to God be the glory, but to the fish, the worm, the monocellular organism! Small wonder that forty per cent of schoolboys today are launched by their schools upon the world as educated pagans—void of faith in an almighty benevolent God!

We do well to bear in mind not only that this story is—in the words of one of evolution's leading apostles—"unproven and unprovable," but that its falsity is proved by numerous flaws and objections.

First, what about the Dinoflagellata who were supposedly our earliest and most primitive forebears? Where did they come from? Science has no answer. The endeavour to bridge the immense gap between living beings and the inanimate world, has baffled science's mightiest brains.

Professor du Nouy remarks that "it is *totally impossible* to account scientifically for all phenomena pertaining to life.... We are faced with a hiatus in our knowledge. There is a gap between living and non-living matter which we have not been able to bridge."—*Human Destiny*.

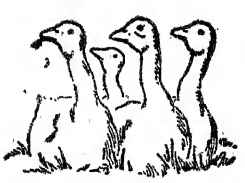
Even if this were the only gap, evolution's position would indeed be untenable. But the fact is that there are numerous gaps which clearly invalidate the whole theory. Evolutionists with an air of great authority assure us that generally, gradual development and transition took place from the elementary to the complex forms of life. There is nothing, absolutely nothing, to prove it. As Sir William Dawson admitted: "In tracing back animals and groups of animals, in geological times, we find that they always end *without any link connecting them with previous beings*, and under circumstances which render any such connection improbable."

Furthermore, scientific examination of the present processes of nature, provides no basis whatever for the contention that evolution is God's way of working. We see today no sign of any radically new development taking place in any living matter, whether animal or vegetable. On this point we again quote from Professor du Nouy: "Let us not give in to the temptation of saying, many things can happen in 100 million years. If nothing happens in a year there is no reason why, by multiplying what has not happened one million or a hundred million times, something will happen at the end of that time."

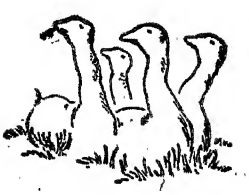
What must surely provide one of the strongest evidences against evolution is the profound difference between the nutritive substance, or blood, of the Dinoflagellata and their supposed offspring, the animals. The fundamental substance in the Dinoflagellata is chlorophyll—as in plants, whilst the corresponding substance in all animals is hæmoglobin. These two substances provide the colour pigments, green for plants, and red for animal blood. Whereas the former has a molecular weight of 904 and is built around magnesium atoms, the latter has a weight of 69,000 and is built around iron. Further complication is provided by the fact that the Arthropoda and mollusks have pigment with molecular weight of from 400,000 to 6,700,000 which is built around atoms of copper.

No evolutionary hypothesis can explain such fundamental differences as these. All talk of a "common bloodstream" and a "common ancestor" is so much foolishness in the light of these facts. Incredible it is that there are today intelligent beings with sufficient gullibility to accept these fantastic and unproven hypotheses as rational truth.

The explanation is, of course, as Paul the apostle sums it up in Romans 1:28: "They did not like to retain God in their knowledge."



EVOLUTION



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